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Dariusz Świerczewski[a], Paweł Gruca[b]

[a] *Institute of Chemistry, Environmental Protection and Biotechnology, Jan Długosz University of Częstochowa, 42-200 Częstochowa, Armii Krajowej 13/15*
e-mail: dswier@ajd.czest.pl
[b] *44 892 Bochum-Langendreer, Wittkampstrasse 39, Germany*

Rare leafhopper species in Polish fauna – distributional maps (Hemiptera: Fulgoromorpha et Cicadomorpha)

Abstract

The paper presents detailed localities for 137 rare leafhopper species recorded in Poland supplemented by distributional maps. Chorological and ecological data are also provided for each species.

Keywords: Insecta, Hemiptera, Fulgoromorpha, Cicadomorpha, Poland, rare species, distributional maps

Introduction

Leafhoppers represent a group of herbivorous insects belonging to the Hemiptera ordo, which includes two separate developmental lineages as suborders – Fulgoromorpha and Cicadomorpha. They are an important component of terrestrial or semi-aquatic ecosystems, where specimens and species can be found in large numbers[1]. They are exclusively phytophagous with many species feeding on a certain plant genus or even on one single plant species thus ecologically forming a homogenous group known also as 'Auchenorrhyncha'. Phloem sap is their usual food but some families like Cicadidae, Cercopidae and some Cicadellidae utilize xylem sap instead, and most Typhlocybinae cicadellids feed on the content of mesophyll cells[2]. According to Nickel and Hildebrandt, leafhoppers are a useful tool for monitoring the biotic conditions of grassland habitats since: i) the numerous species occur in high population densities, ii) being primary consumers they interact with both plants and predators, iii) they show specific life strategies and occupy specific spatial and temporal niches, iv) they respond rapidly to the management regime and v) whole assemblages can be described quickly by sampling several times a year[3]. In contrast, the arboreal Auchenorrhyncha guilds are less diverse with the highest number of species associated with widespread and tall-growing trees like *Quercus robur*, *Q. petraea*, *Betula pendula*, *Alnus glutinosa*, *Ulmus* spp. and *Acer pseudoplatanus* (Aceraceae)[4].

In Europe 2080 species have been recorded so far with more than 900 species known from Central Europe[5,6]. The leafhopper fauna of Poland covers 543 species so far[7], of which 137 species are recognized as rare and are found only in a few places. They mostly represent wide-ranging elements: European (26 species), Siberian (22 species), Eurosiberian and Western Palaearctic (16 species respectively). Regarding the ecological parameters, 1st degree monophagous species (60 species), those hibernating as eggs (57) and giving 1 generation per year (114) are the most numerous.

Two species of Fulgoromorpha and ten species of Cicadomorpha have been placed on the Red List of Threatened Animals in Poland[8]. These are: *Cixius alpestris* WAGN., *Calligypona reyi* (FIEB.), *Cicadetta concinna* (GERM.), *Pauceptyelus coriaceus* (FALL.), *Aphrophora major* UHL., *Aphrophora similis* LETH., *Agallia carpathica* MEL., *Sonronius dahlbomi* (ZETT.), *Colladonus torneellus* (ZETT.), *Adarrus bellevoyei* (PUT.), *Mendrausus pauxillus* (FIEB.), *Diplocolenus bensoni* (CHINA), *Diplocolenus penthopitta* (KOL.) and *Mocuellus quadricornis* DLAB. Of these only three *Cicadetta concinna* (GERM.), *Aphrophora major* UHL. and *Aphrophora similis* LETH. were included in the Polish Red Data Book of Animals[9]. In addition, *Cicadetta concinna* is protected by law. In terms of nature conservation, first of all there is a need to actively protect the habitats of the rare and endangered species as they are associated with ecosystems which are at the range of their ocurrence in Poland and are thus likely to disappear under the pressure of the secondary succession[10]. Being strict specialists, the local population may also be badly affected when its host-plants are in decline. Furthermore, intensive investigations should be carried out in the nearest future to asses their current threatening status as it is possible that some of them have already become extinct on the territory of Poland .

List of species localities with distributional maps and references

A list of 137 rare leafhopper species is presented below. Deatailed localities are given for each species, including those published by Nast in his Catalogus Faunae Poloniae[11] together with data from papers and unpublished sources from the period 1976-2009. Moreover, the listed localities are displayed on distributional maps generated using the GNOMON software (Desmodus). Each species is also supplemented with chorological and ecological data (food plants, diet width, overwintering stage, number of generations) taken from the check-list of German and Finnish Auchenorrhyncha provided by Nickel, Remane[12] and Söderman[13] respectively.

Cixius alpestris WAGNER, 1939 – Localities: Western Beskidy Mts: Maków Podhalański ad Sucha Beskidzka, Łomnica ad Nowy Sącz, Gorce

(SMRECZYŃSKI 1954); Pieniny Mts (SMRECZYŃSKI 1954) – European high mountains; shrubs, tall herbs; polyphagous?; nymph; 1 [Fig. 1]

Cixius cambricus CHINA, 1935 – Localities: Masurian Lake District: Nidzica – locus typicus (WAGNER 1939); Małopolska Upland: Krzyżanowice, Skowronno and Skorocice ad Pińczów (NAST 1973, GĘBICKI 1987); Upper Silesia: Bytom (RUDA 1981, unpubl.) Eastern Beskidy Mts: Przemyśl (SMRECZYŃSKI 1954); European – shrubs; polyphagous?; nymph; 1 [Fig. 1]

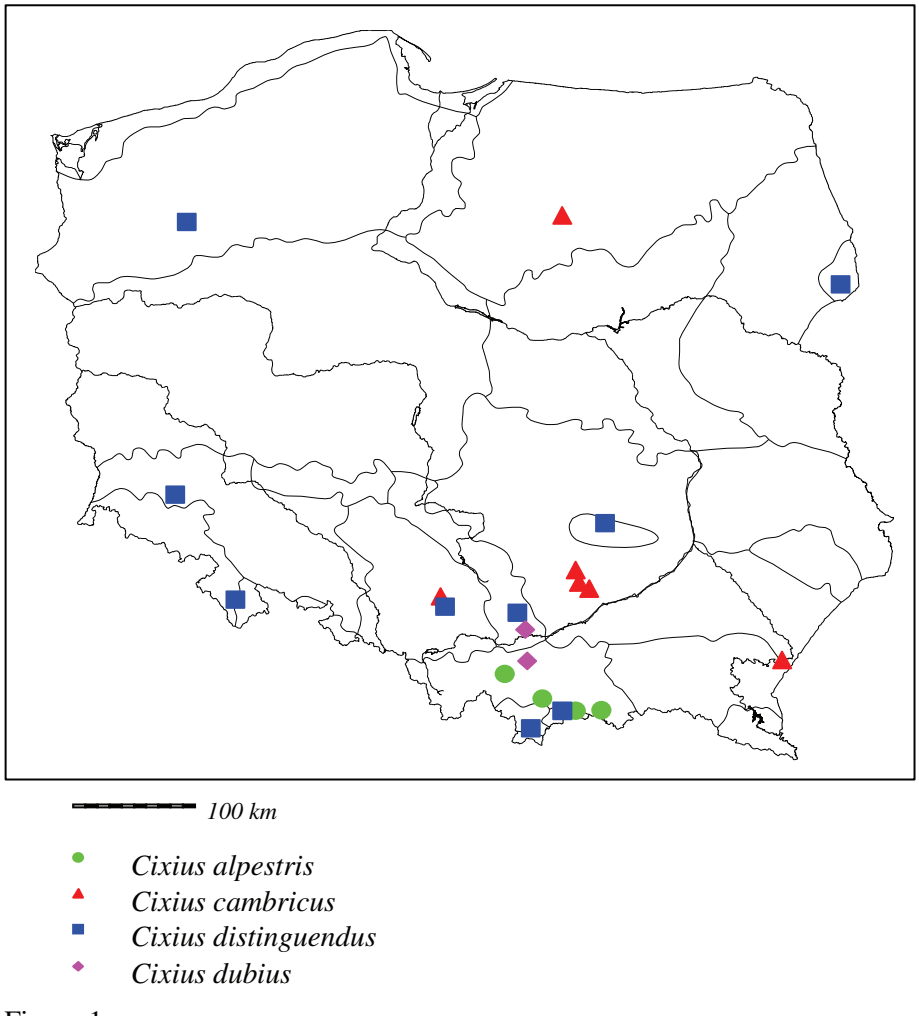


Figure 1.

Cixius distinguendus KIRCHBAUM, 1868 – Localities: Pomeranian Lake District: Kalisz Pomorski (GĘBICKI 1980, unpubl.); Białowieża Forest: Białowieski National Park (KARPIŃSKI 1958); Lower Silesia: Złotoryja (WAGNER 1939); Upper Silesia: Katowice (GĘBICKI, unpubl.); Krakowsko-Wieluńska Upland: Ojców ad Olkusz (NAST 1973); Świętokrzyskie Mts (NAST 1936, 1938a, 1973); Eastern Sudetes Mts: Roztoki Bystrzyckie ad Bystrzyca Kłodzka (NAST 1973); Pieniny Mts (SMRECZYŃSKI 1954); Tatra Mts (SMRECZYŃSKI 1954) – Eurosiberian?; deciduous woody plants; polyphagous?; nymph; 1 [Fig. 1]

Cixius dubius WAGNER, 1939 – Localities: Krakowsko-Wieluńska Upland: Kraków (SMRECZYŃSKI 1954); Western Beskidy Mts: Myślenice (SMRECZYŃSKI 1954) – European; deciduous woody plants; polyphagous?; nymph; 1 [Fig. 1]

Cixius beieri WAGNER, 1939 [syn. *Cixius haupti* DLABOLA, 1949] – Localities: Western Beskidy Mts: Gorce (SMRECZYŃSKI 1906a, 1954), Babia Góra (SMRECZYŃSKI 1954); Bieszczady Mts (NAST 1976b); Pieniny Mts (SMRECZYŃSKI 1906a, NAST 1976a); Tatra Mts (SMRECZYŃSKI 1906a, 1954, WAGNER 1939) – European; *Picea*, *Abies*?; 1st degree monophagous?; nymph; 1 [Fig. 2]

Cixius heydenii KIRSCHBAUM, 1868 – Localities: Nowotarska Dale: Zakopane (ŁOMNICKI 1884); Tatra Mts (NOWICKI 1868, SMRECZYŃSKI 1954) – European high mountains?; shrubs and others; polyphagous?; nymph; 1 [Fig. 2]

Cixius similis KIRSCHBAUM, 1868 – Localities: Baltic Coast: vicinity of Słupsk and Sławno (KARL 1935, WAGNER 1941); Pomeranian Lake District: Żukowo ad Kartuzy (MATSUMURA 1906); Mazovian Lowland: Celestynów ad Otwock (NAST 1976b); Białowieża Forest: Białowieski National Park (KARPIŃSKI 1958); Western Sudetes Mts: Nat. Reserv. 'Mszary Izerskie' ad Szklarska Poręba, Nat. Reserv. 'Zieleniec' ad Kłodzko (SZWEDO et al. 1998); Nowotarska Dale: Nat. Reserv. 'Bór na Czerwonym' ad Nowy Targ (SZWEDO et al. 1998); Tatra Mts (SMRECZYŃSKI 1954) – Siberian; *Betula*, *Pinus*, *Vaccinium*?; 2nd degree oligophagous?; nymph; 1 [Fig. 2]

Cixius simplex (HERRICH–SCHÄFFER, 1835) – Localities: Pomeranian Lake District: Bielinek ad Chojna (HAUPT 1934, ENGEL 1938); Upper Silesia: Bytom (RUDA 1981, unpubl.); Krakowsko-Wieluńska Upland: Kraków (STOBIECKI 1915, SMRECZYŃSKI 1954); Western Beskidy Mts: Kosowa ad Wa-

dowice (STOBIECKI 1915), Janowice ad Limanowa (STOBIECKI 1915, SMRECZYŃSKI 1954), Kasina Wielka and Ciecień ad Limanowa, Maków Podhalański ad Sucha Beskidzka, Gorce, Myślenice (SMRECZYŃSKI 1954); Nowotarska Dale: Stara Biała ad Nowy Targ (SMRECZYŃSKI 1954); Eastern Beskidy Mts: Liwocz and Gamrat ad Jasło (SMRECZYŃSKI 1954); Pieniny Mts (STOBIECKI 1915, SMRECZYŃSKI 1954, NAST 1976a); <<Prussia>> (SIEBOLD 1839, BRISCHKE 1871) – European?; shrubs; polyphagous?; nymph; 1 [Fig. 2]

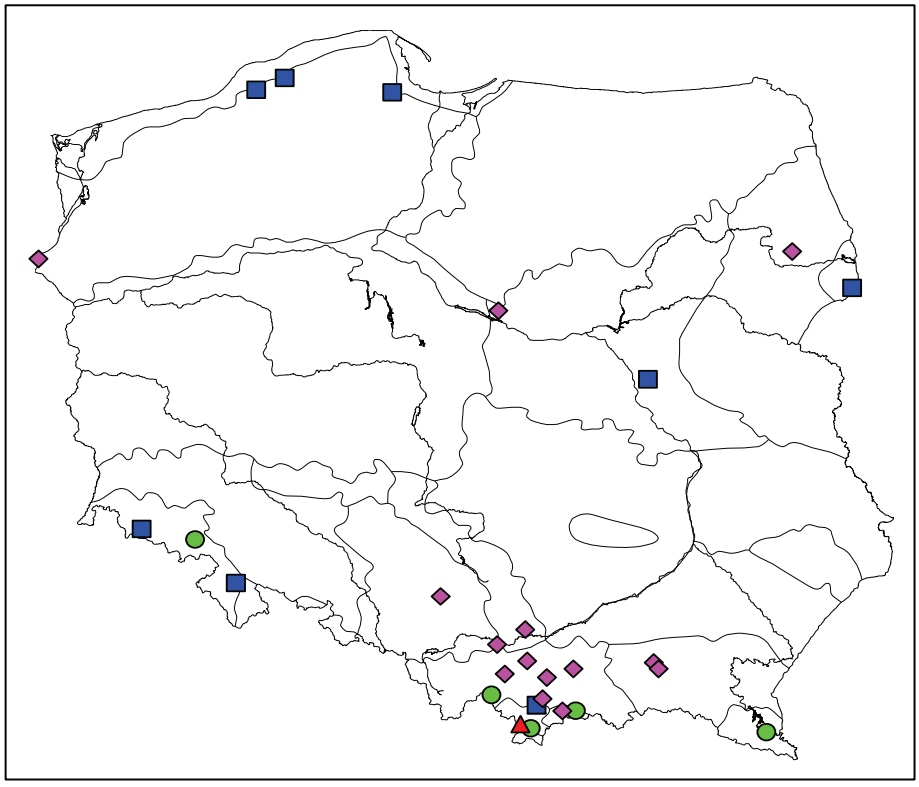


Figure 2.

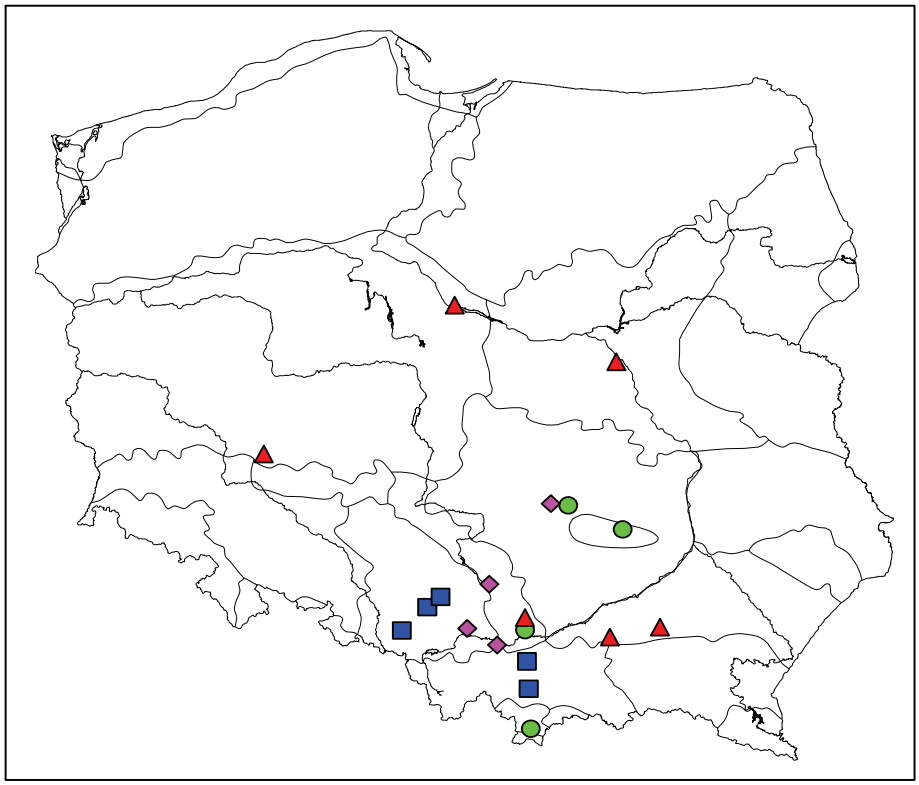


Figure 3.

Cixius stigmaticus (GERMAR, 1818) – Localities: Krakowsko-Wieluńska Upland: Kraków (SMRECZYŃSKI 1906a, 1954, STOBIECKI 1915); Małopolska Upland (NAST 1976b); Świętokrzyskie Mts (SMRECZYŃSKI 1954); Tatra Mts (STOBIECKI 1915); <<Prussia>> (SIEBOLD 1839, BRISCHKE 1871) – European; deciduous woody plants; polyphagous?; nymph; 1 [Fig. 3]

Myndus musivus (GERMAR, 1825) – Localities: Wielkopolsko-Kujawska Lowland: Nat. Reserv. 'Kulin' ad Włocławek (NAST 1955); Mazovian Lowland: Warszawa (NAST 1955); Krakowsko-Wieluńska Upland: Kraków

(SMRECZYŃSKI 1954); Sandomierska Lowland: Kędzierz ad Dębica (SMRECZYŃSKI 1954); Western Beskidy Mts: Bogumiłowice ad Tarnów (SMRECZYŃSKI 1954); Eastern Beskidy Mts: Żmigród ad Jasło (SMRECZYŃSKI 1954) – Western Palaearctic; *Salix viminalis*, *S. triandra* and others; 2 degree monophagous?; nymph; 1 [Fig. 3]

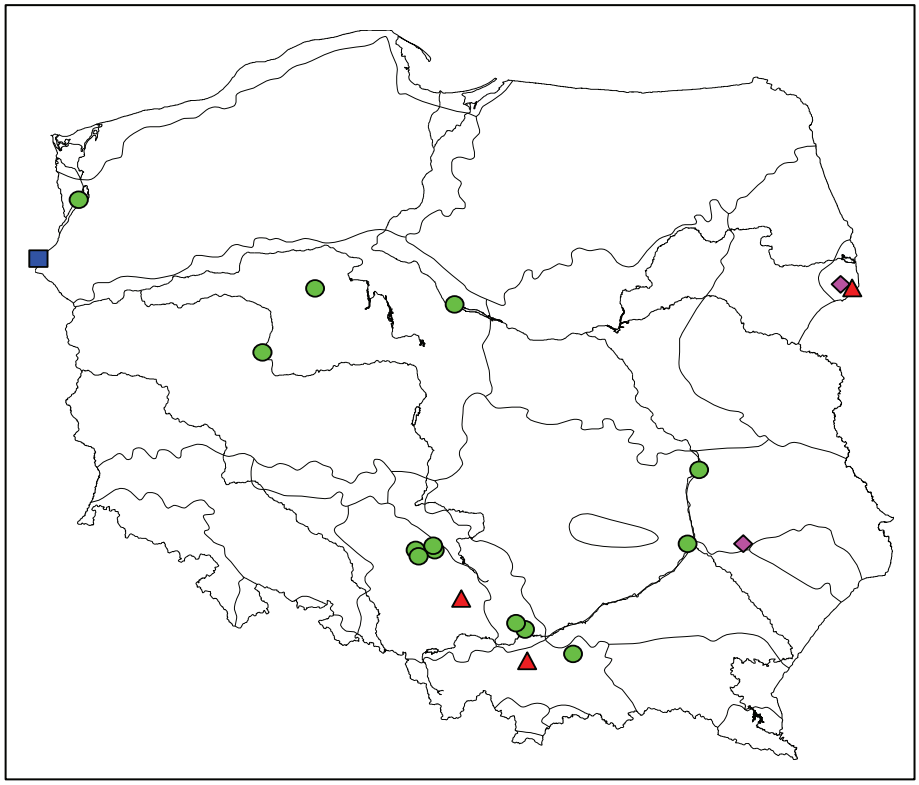


Figure 4.

Pentastiridius beieri (WAGNER, 1970) – Localities: Upper Silesia: Rybnik, Ruda Ślaska, Bytom (TARZAKOWSKA 1985 unpubl., RUDA 1981 unpubl..); Western Beskidy Mts: Rabka-Słone, Myślenice (NAST 1977) – European high

mountains; *Salix purpurea*, *S. eleagnos* (a. o.?); 2nd degree oligophagous?; nymph; 1 [Fig. 3]

Reptalus panzeri (LÖW, 1883) – Localities: Upper Silesia: Chełmek ad Chrzanów (STOBIECKI 1915); Krakowsko-Wieluńska Upland (STOBIECKI 1915, SMRECZYŃSKI 1954, NAST 1973); Małopolska Upland (NAST 1973, GĘBICKI 1987); Western Beskidy Mts: Kosowa ad Wadowice (STOBIECKI 1915) – Western Palaearctic; *Prunus spinosa*, *Rosa* (a. o. ?); polyphagous ?; nymph; 1 [Fig. 3]

Asiraca clavicornis (FABRICIUS, 1794) – Localities: Pomeranian Lake District: Szczecin (WAGNER 1941); Wielkopolsko-Kujawska Lowland: Brudzyń ad Turek (SZULCZEWSKI 1933), Wielkopolski National Park, Nat. Reserv. 'Kulin' ad Włocławek (NAST 1976b); Upper Silesia: Olszyna, Kochcice, Herby Ślaskie and Droniowiczki ad Lubliniec (SZULCZEWSKI 1931); Krakowsko-Wieluńska Upland: Kraków and Ujazd ad Kraków (SMRECZYŃSKI 1954); Małopolska Upland: Dwikozy ad Sandomierz (NAST 1976b); Lubelska Upland: Kazimierz Dolny ad Puławy (NAST 1976b); Western Beskidy Mts: Melsztyn ad Brzesko (SMRECZYŃSKI 1906b); <<Prussia>> (SIEBOLD 1839, BRISCHKE 1871); <<Silesia>> (WEIGEL 1806) – Transpalaearctic; dicotyledonous herbs; polyphagous; adult; 1 [Fig. 4]

Kelisia guttulifera (KIRSCHBAUM, 1868) – Localities: Białowieża Forest (NAST 1976b); Upper Silesia: Dąbrowa Górnicza (GĘBICKI 1979); Western Beskidy Mts: Myślenice (SMRECZYŃSKI 1954) – European; *Carex sylvatica*, *C. remota*; 2nd degree monophagous ?; adult; 1 [Fig. 4]

Kelisia haupti WAGNER, 1939 – Localities: Pomeranian Lake District: Bielinek ad Chojna (HAUPT 1934, 1935, ENGEL 1938) – South European; *Carex humilis;* 1st degree monophagous; egg; 1 [Fig. 4]

Kelisia nervosa VILBASTE, 1972 – Localities: Białowieża Forest (NAST 1976b); Sandomierska Lowland: Janów Lubelski (BEDNARCZYK, GĘBICKI 1998) – North European; *Carex elata*?; 1st degree monophagous ?; egg ?; 1 [Fig. 4]

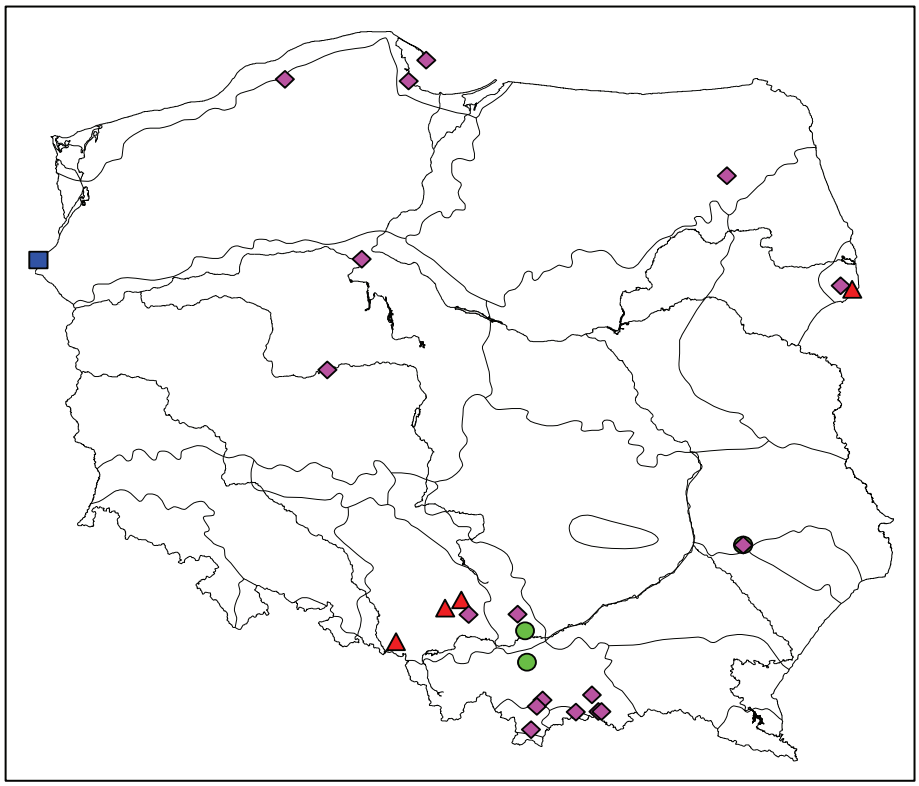


Figure 5.

Kelisia praecox HAUPT, 1935 – Localities: Krakowsko-Wieluńska Upland: Kraków (SMRECZYŃSKI 1954); Sandomierska Lowland: Janów Lubelski (BEDNARCZYK, GĘBICKI 1998); Western Beskidy Mts: Myślenice (SMRECZYŃSKI 1954) – Eurosiberian; *Carex brizoides* and others; 2nd degree monophagous; adult; 1 [Fig. 5]

Kelisia punctulum (KIRSCHBAUM, 1868) – Localities: Białowieża Forest: Białowieski National Park (NAST 1976b); Upper Silesia: Dąbrowa Górnicza,

Wodzisław Śląski, Katowice (GĘBICKI 1979 and unpubl. data) – European; *Carex acutiformis*; 1st degree monophagous ?; egg; 1 [Fig. 5]

Kelisia sabulicola WAGNER, 1952 – Localities: Pomeranian Lake District: Bielinek ad Chojna (WAGNER 1952) – Western European; *Carex arenaria*; 1st degree monophagous; adult; 1 [Fig. 5]

Kelisia vittipennis (J. SAHLBERG, 1868) – Localities: Baltic Coast: Sopot (MATSUMURA 1906), Słupsk (KARL 1935, WAGNER 1941), Hel (SMRECZYŃSKI 1954); Masurian Lake District: Bagna Kuwaskie ad Grajewo (ANDRZEJEWSKA 1965); Wielkopolsko-Kujawska Lowland: Brzoza ad Bydgoszcz, Spławie ad Września (SZULCZEWSKI 1933); Białowieża Forest: Białowieski National Park (NAST 1976b); Upper Silesia: Jaworzno-Szczakowa (SZWEDO et al. 1998); Krakowsko-Wieluńska Upland: Ojców ad Olkusz (SZWEDO 1992); Sandomierska Lowland: Janów Lubelski (BEDNARCZYK, GĘBICKI 1998); Western Beskidy Mts: Gorce (SMRECZYŃSKI 1906b, 1910a), Stary Sącz, Piwniczna and Łomnica ad Nowy Sącz (SMRECZYŃSKI 1954); Nowotarska Dale: Zakopane (SMRECZYŃSKI 1954), Nat. Reserv. 'Bór na Czerwonym' ad Nowy Targ (SZWEDO et al. 1998); Pieniny Mts (SMRECZYŃSKI 1954) – Eurosiberian; *Eriophorum*, *Carex*?; 2nd degree monophagous?; egg; 1 [Fig. 5]

Anakelisia fasciata (KIRSCHBAUM, 1868) – Localities: Białowieża Forest (NAST 1973) – European; *Carex riparia*; 1st degree monophagous; egg; 1 [Fig. 6]

Stenocranus fuscovittatus (STÅL, 1858) – Localities: Baltic Coast: Słupsk (WAGNER 1941); Pomeranian Lake District: Szczecin (SCHMIDT 1912, WAGNER 1941), Trzebielino ad Miastko (WAGNER 1941), Bielinek ad Chojna (HAUPT 1931), Żukowo ad Kartuzy (MATSUMURA 1906); Masurian Lake District: Bagna Kuwaskie ad Grajewo (ANDRZEJEWSKA 1965); Białowieża Forest: Białowieski National Park (KARPIŃSKI 1958); Lower Silesia: Gorzelin ad Lubin (NAST 1973); Sandomierska Lowland: Janów Lubelski (BEDNARCZYK, GĘBICKI 1998); <<Prussia>> (WAGNER, FRANZ 1961) – Eurosiberian; *Carex* spp.; 2nd degree monophagous; adult; 1 [Fig. 6]

Jassidaeus lugubris (SIGNORET, 1865) – Localities: Pomeranian Lake District: Knieja Bukowa ad Szczecin (NAST 1955); Wielkopolsko-Kujawska Lowland: Wielkopolski National Park and Wierzonka ad Poznań (NAST 1973); Mazovian Lowland: Warszawa (NAST 1955); Małopolska Upland: Grabowiec

ad Pińczów (NAST 1955) – South European; *Festuca ovina*, *Stipa capillata*?; 1st degree monophagous?; adult; 1 [Fig. 6]

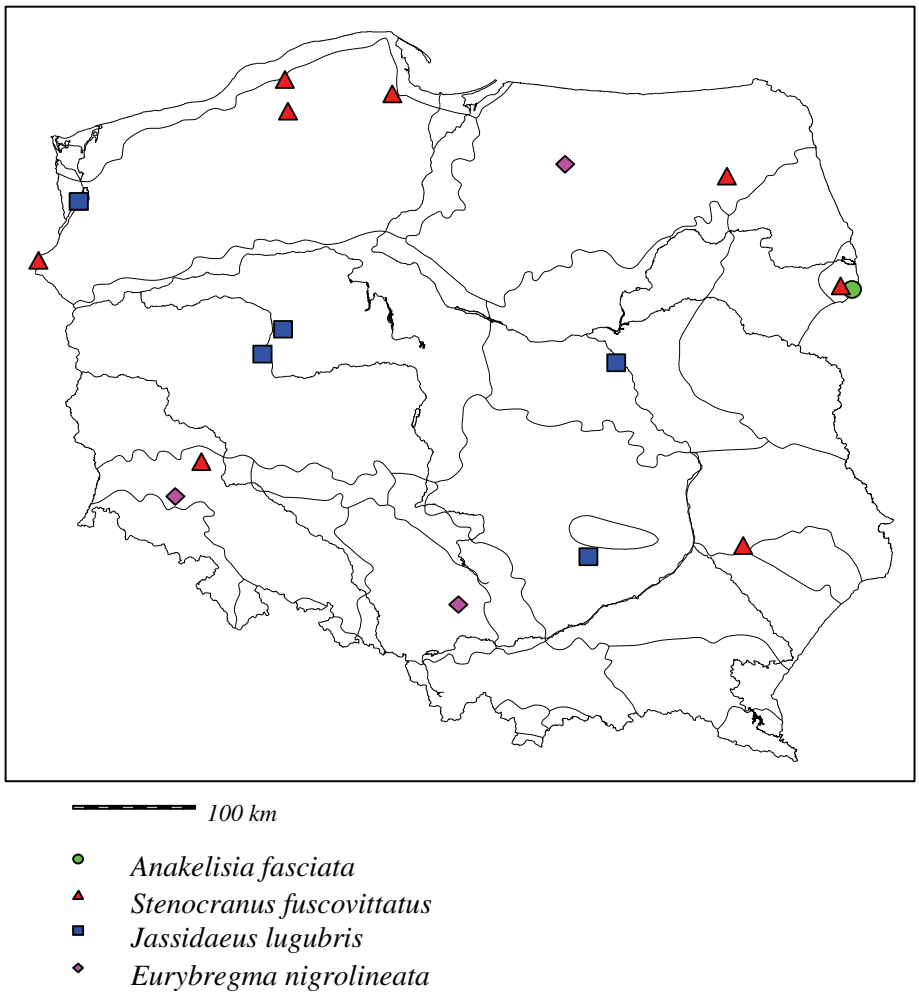


Figure 6.

Eurybregma nigrolineata SCOTT, 1875 – Localities: Lower Silesia: Wielisław Złotoryjski ad Złotoryja (NAST 1973); Upper Silesia: Sosnowiec (WALCZAK 2005); Krakowsko-Wieluńska Upland: Olsztyn ad Częstochowa (ŚWIERCZEWSKI, GĘBICKI 2004) – Eurosiberian?; Poaceae; 1st degree oligophagous; nymph; 1 [Fig. 6]

Metropis inermis WAGNER, 1939 – Localities: Krakowsko-Wieluńska Upland: Kraków (SMRECZYŃSKI 1954), Olsztyn ad Częstochowa (ŚWIERCZEWSKI, GĘBICKI 2004); Małopolska Upland: Nat. Reserv. 'Skowronno' ad Pińczów (NAST 1973) – Kazakh?; *Festuca ovina*; 1st degree monophagous; nymph; 1 [Fig. 7]

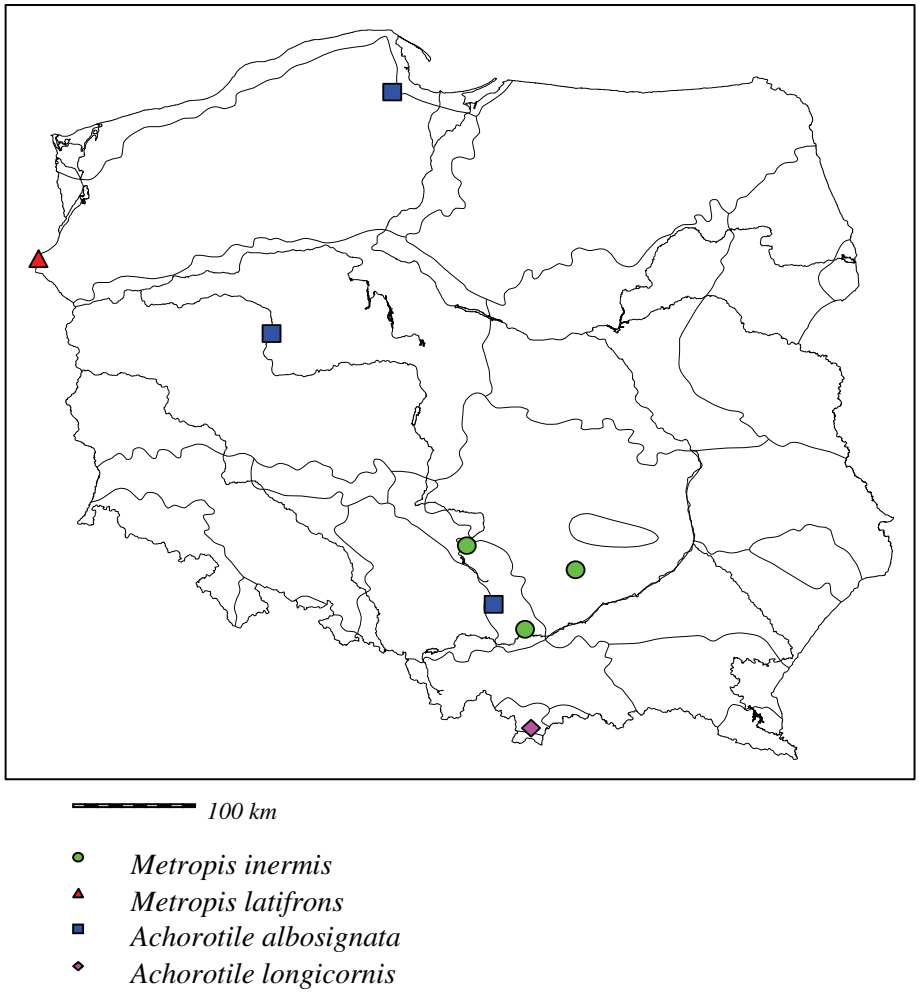


Figure 7.

Metropis latifrons (KIRSCHBAUM, 1868) – Localities: Pomeranian Lake District: Bielinek ad Chojna (HAUPT 1931, 1935) – Western Mediterranean; *Festuca ovina* (and others?); 1st degree monophagous?; nymph; 1 [Fig. 7]

Achorotile albosignata (DAHLBOM, 1850) – Localities: Pomeranian Lake District: Żukowo ad Kartuzy (MATSUMURA 1906); Wielkopolsko-Kujawska Lowland: Poznań (SZULCZEWSKI 1933); Upper Silesia: Pustynia Błędowska (JASIŃSKA 1980) – Siberian; *Festuca* spec.?; 1st degree monophagous?; nymph?; 1? [Fig. 7]

Achorotile longicornis (J. SAHLBERG, 1871) – Localities: Tatra Mts (NAST 1973) – European high mountains; *Juncus trifidus*; 1st degree monophagous; nymph; 1 [Fig. 7]

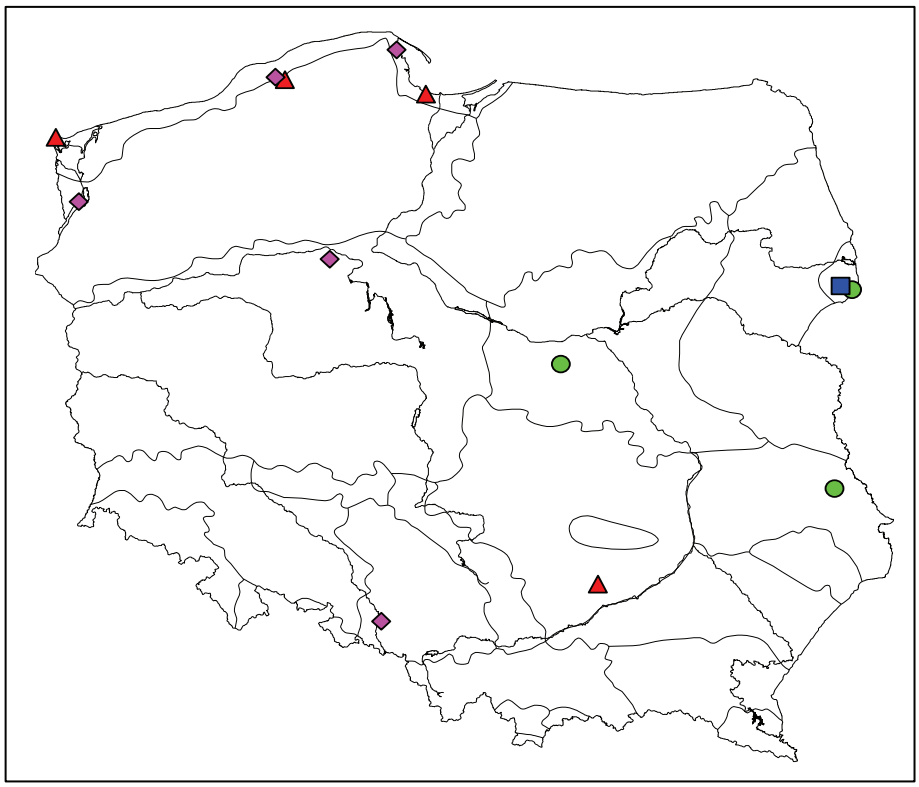


Figure 8.

Conomelus lorifer dehneli NAST, 1966 – Localities: Mazovian Lowland: Teresin ad Sochaczew (NAST 1976b); Białowieża Forest (NAST 1966); Lubelska Upland: vicinity of Chełm (NAST 1966) – ?; *Juncus effusus* and others?; 2nd degree monophagous?; egg; 1 [Fig. 8]

Euides alpina WAGNER, 1948 – Localities: Białowieża Forest: Białowieski Park Narodowy (KARPIŃSKI 1958) – Eurosiberian; *Phragmites australis*; 1st degree monophagous; nymph?; 1 [Fig. 8]

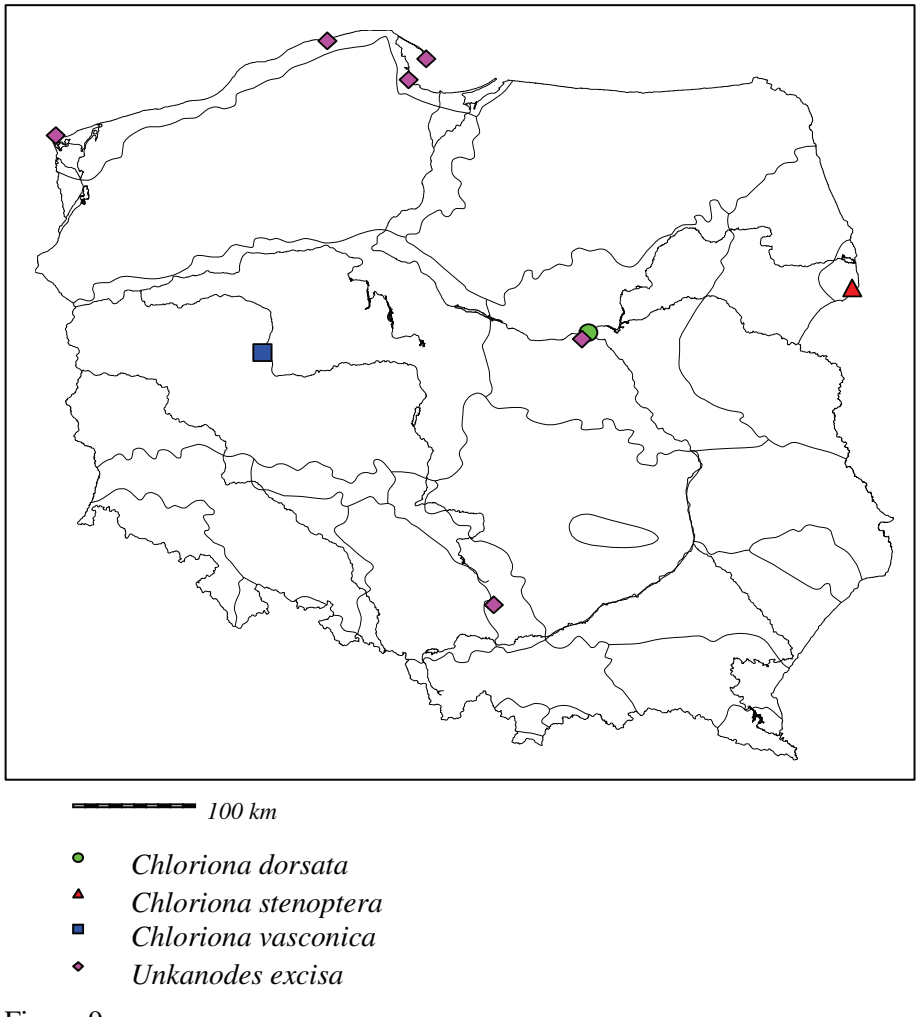


Figure 9.

Delphax pulchellus (CURTIS, 1833) – Localities: Baltic Coast: vicinity of Słupsk (WAGNER 1941), Nowa Wieś ad Świnoujście, Górki Wschodnie ad Pruszcz Gdański (SMRECZYŃSKI 1954); Małopolska Upland: Owczary ad Busko (NAST 1976b) – European; *Phragmites australis*; 1st degree monophagous; egg; 1 [Fig. 8]

Euides basilinea (GERMAR, 1821) – Localities: Baltic Coast: Słupsk (WAGNER 1941), Wielka Wieś ad Puck (SMRECZYŃSKI 1954); Pomeranian Lake District: Szczecin (SCHMIDT 1912, WAGNER 1941); Wielkopolsko-Kujawska Lowland: Słonawy ad Szubin (SZULCZEWSKI 1933); Upper Silesia: Nat. Reserv. 'Łężczok' ad Nędza (SZWEDO et al. 1998) – Western Palaearctic; *Phragmites australis*; 1st degree monophagous; nymph; 1–2 [Fig. 8]

Chloriona dorsata EDWARDS, 1898 – Localities: Mazovian Lowland: Buraków Mały ad Nowy Dwór Mazowiecki (NAST 1973) – Western Palaearctic; *Phragmites australis*; 1st degree monophagous; nymph; 1? [Fig. 9]

Chloriona stenoptera (FLOR, 1861) – Localities: Białowieża Forest: Białowieski National Park (NAST 1958, KARPIŃSKI 1958) – Western Palaearctic; *Phragmites australis*; 1st degree monophagous; nymph; 1? [Fig. 9]

Chloriona vasconica RIBAUT, 1934 – Localities: Wielkopolsko-Kujawska Lowland: Wielkopolski National Park (NAST 1973) – European; *Phragmites australis*; 1st degree monophagous; nymph; 1–2 [Fig. 9]

Unkanodes excisa (MELICHAR, 1898) – Localities: Baltic Coast: Świnoujście (WAGNER 1941), Sopot, Hel (MATSUMURA 1906), Łeba ad Lębork (NAST 1973); Mazovian Lowland: Cybulice ad Nowy Dwór Mazowiecki (NAST 1973); Upper Silesia: Pustynia Błędowska (JASIŃSKA 1980) – Siberian; *Elymus arenarius*; 1st degree monophagous; nymph; 2 [Fig. 9]

Ditropsis flavipes (SIGNORET, 1865) – Localities: Wielkopolsko-Kujawska Lowland: Wielkopolski National Park (NAST 1973); Sandomierska Lowland: Janów Lubelski (BEDNARCZYK, GĘBICKI 1998) – Kazakh?; *Bromus erectus*; 1st degree monophagous; nymph; 2 [Fig. 10]

Paraliburnia adela (FLOR, 1861) – Localities: Mazovian Lowland: Szymanów ad Sochaczew (SMRECZYŃSKI 1954) – Eurosiberian?; *Phalaris arundinacea*; 1st degree monophagous; nymph; (1–?) 2 [Fig. 10]

Mirabella albifrons (FIEBER, 1879) – Localities: Wielkopolsko-Kujawska Lowland: Poznań (NAST 1976b); Małopolska Upland: Michałów ad Pińczów (NAST 1955); Upper Silesia: Rybnik (ZIMOŃ 1986, unpubl.); Sandomierska Lowland: Zarzecze ad Jarosław (KRASUCKI 1919); Western Beskidy Mts: Stary Sącz, Słotwina ad Brzesko (SMRECZYŃSKI 1954) – Eurosiberian?; *Calamagrostis epigejos*, *C. canescens*; 2nd degree monophagous; nymph; 2 [Fig. 10]

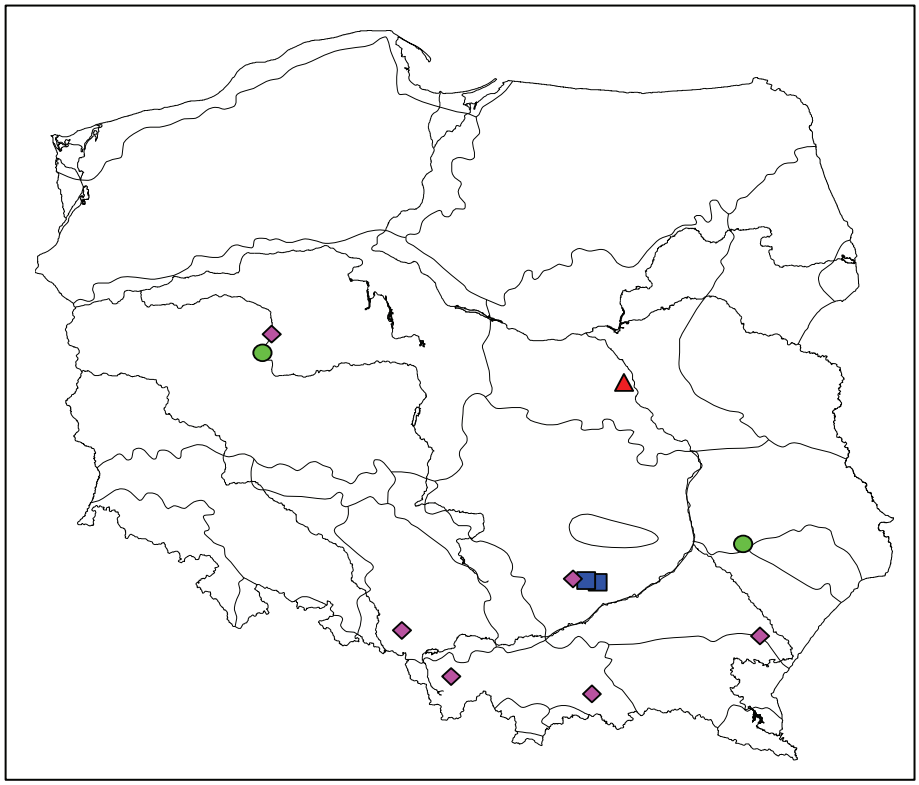


Figure 10.

Calligypona reyi (FIEBER, 1866) – Localities: Małopolska Upland: Owczary and Gadawa ad Busko-Zdrój (NAST 1973) – Transpalaearctic; *Schoenoplectus lacustris*, *S. tabernaemontani*; 2nd degree monophagous; nymph; 1–2 [Fig. 10]

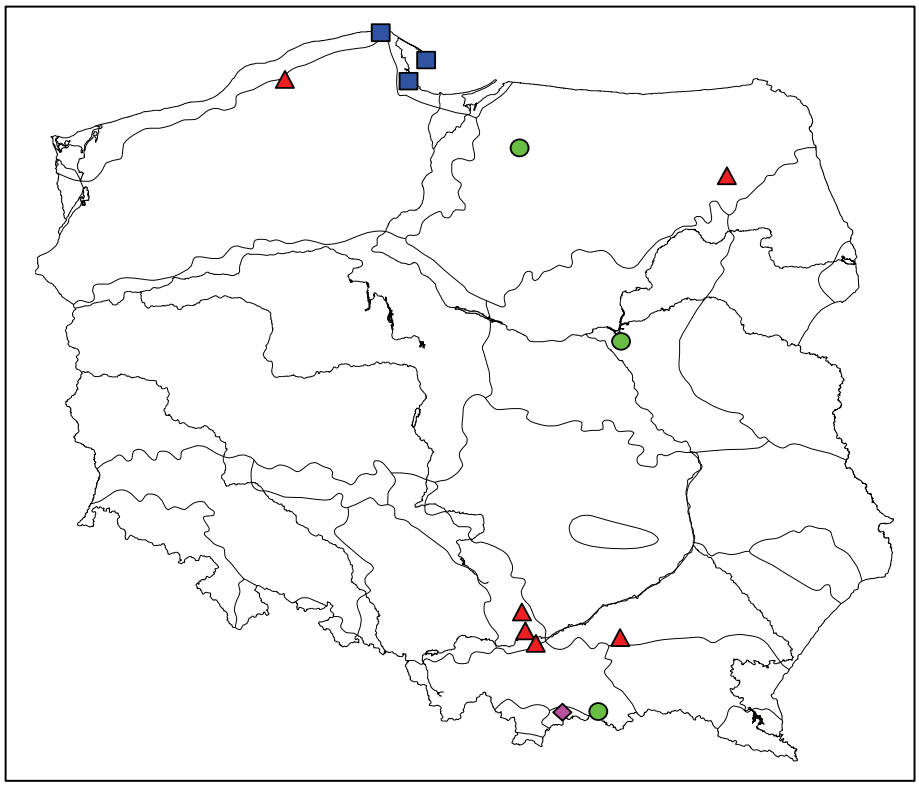


Figure 11.

Delphacodes capnodes (SCOTT, 1870) – Localities: Masurian Lake District: Linie ad Chełmno (HAUPT 1917); Mazovian Lowland: Czarna Struga ad Radzymin (NAST 1938b); Western Beskidy Mts: Góra Kicarz near Piwniczna ad Nowy Sącz (SMRECZYŃSKI 1954) – European; *Eriophorum angustifolium*, *Carex* spp.; 1st degree oligophagous; adult; 1 [Fig. 11]

Delphacodes venosus (GERMAR, 1830) – Localities: Baltic Coast: vicinity of Słupsk (KARL 1935, WAGNER 1941); Masurian Lake District: Bagna Kuwaskie ad Grajewo (ANDRZEJEWSKA 1965); Krakowsko-Wieluńska Upland: Kraków (SMRECZYŃSKI 1954); Western Beskidy Mts: Brzezinki ad Tarnów (SMRECZYŃSKI 1906b), Krzyszkowice and Nowa Wieś ad Kraków (SMRECZYŃSKI 1954) – European?; Poaceae, *Carex*?; 1st degree oligophagous?; adult; 1 [Fig. 11]

Gravesteiniella boldi (SCOTT, 1870) – Localities: Baltic Coast: Hel (ENDERLEIN 1908), Sopot (HAUPT 1935), Karwia ad Puck (NAST 1973) – Eurosiberian; *Ammophila arenaria*; 1st degree monophagous; nymph; 2 [Fig. 11]

Chlorionidea flava LÖW, 1885 – Localities: Pieniny Mts (SMRECZYŃSKI 1954) – South European; *Sesleria varia*; 1st degree monophagous; nymph; 1–2 [Fig. 11]

Nothodelphax albocarinata (STÅL, 1858) – Localities: Baltic Coast: vicinity of Słupsk and Sławno (KARL 1935, WAGNER 1941), Bielawskie Błota ad Puck (NAST 1976b); Krakowsko-Wieluńska Upland: Kraków (SMRECZYŃSKI 1954); Świętokrzyskie Mts: Cisów ad Kielce (NAST 1938a); Sandomierska Lowland: Sandomierska Forest ad Rozwadów (NAST 1973); Western Sudetes Mts: Nat. Reserv. 'Zieleniec' ad Kłodzko (SZWEDO et al. 1998);<<Western Prussia>> (HAUPT 1935) – Siberian; *Carex limosa*?; 1st degree monophagous?; nymph; 2 [Fig. 12]

Nothodelphax distincta (FLOR, 1861) – Localities: Baltic Coast: vicinity of Puck (ENDERLEIN 1906, NAST 1973); Mazovian Lowland: Czarna Struga ad Radzymin (NAST 1973); Sandomierska Lowland: Janów Lubelski (BEDNARCZYK, GĘBICKI 1998); Western Sudetes Mts: Góry Izerskie (NAST 1973), Nat. Reserv. 'Mszary Izerskie' ad Szklarska Poręba, Nat. Reserv. 'Zieleniec' ad Kłodzko (SZWEDO et al. 1998); Nowotarska Dale: vicinity of Nowy Targ (NAST 1973), Nat. Reserv. 'Bór na Czerwonym' ad Nowy Targ (SZWEDO et al. 1998) – North European; *Eriophorum vaginatum*; 1st degree monophagous; nymph; 1–2 [Fig. 12]

Florodelphax leptosoma (FLOR, 1861) – Localities: Baltic Coast: vicinity of Słupsk (KARL 1935, WAGNER 1941); Pomeranian Lake District: Żukowo ad Kartuzy (MATSUMURA 1906); Wielkopolsko-Kujawska Lowland: Środa (SZULCZEWSKI 1933); Wzgórza Trzebnickie: Ostrzeszów (SZULCZEWSKI 1933); Krakowsko-Wieluńska Upland: Alwernia ad Chrzanów (SMRECZYŃSKI 1906b), Regulice ad Chrzanów, Kraków (SMRECZYŃSKI

1954); Małopolska Upland: Olszowa Wola ad Rawa Mazowiecka (SMRECZYŃSKI 1954); Sandomierska Lowland: Pustynia ad Dębica (SMRECZYŃSKI 1954); Western Beskidy Mts: Gorce, Przydonica, Glinik and Grybów ad Nowy Sącz (SMRECZYŃSKI 1906b), Słotwina ad Brzesko, Ciężkowice ad Tarnów, Myślenice, Stary Sącz, Rytro and Piwniczna ad Nowy Sącz (SMRECZYŃSKI 1954); Eastern Beskidy Mts: Bistuszowa ad Tarnów (SMRECZYŃSKI 1906b); Pieniny Mts: Krościenko (SMRECZYŃSKI 1954, NAST 1976a) – European?; *Juncus articulatus* and others; 2nd degree monophagous; nymph; 2 [Fig. 12]

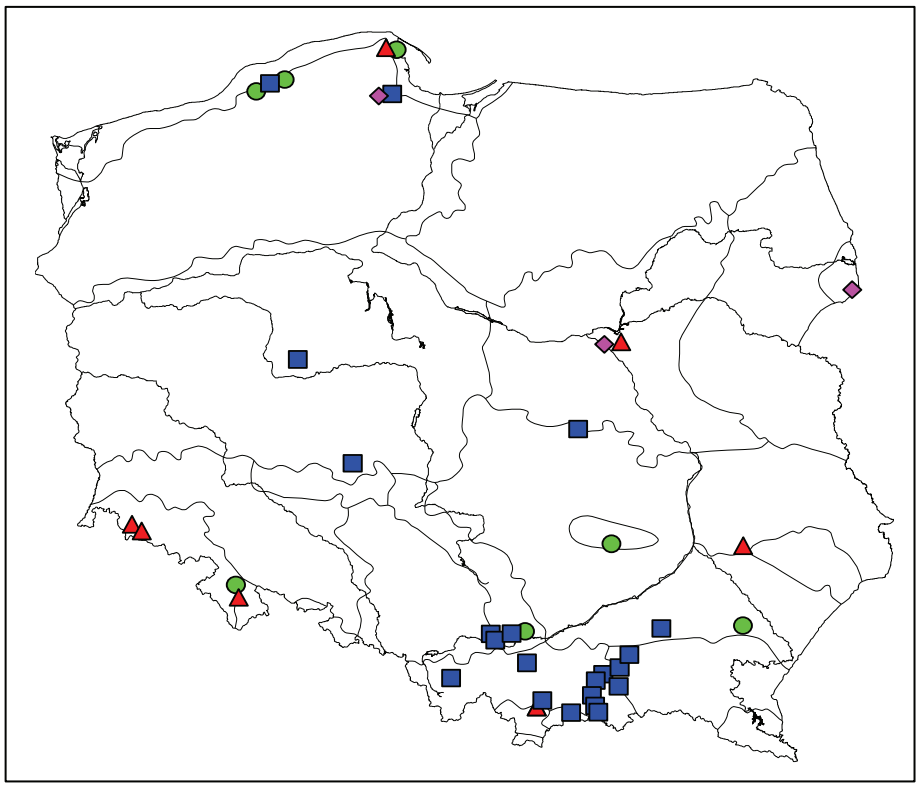


Figure 12.

Oncodelphax pullula (BOHEMAN, 1952) – Localities: Pomeranian Lake District: Żukowo ad Kartuzy (MATSUMURA 1906); Mazovian Lowland: Kampinoska Forest (NAST 1976b); Białowieża Forest (NAST 1976b) – North European; *Carex nigra* (and others?); 2nd degree monophagous?; nymph; 1 [Fig. 12]

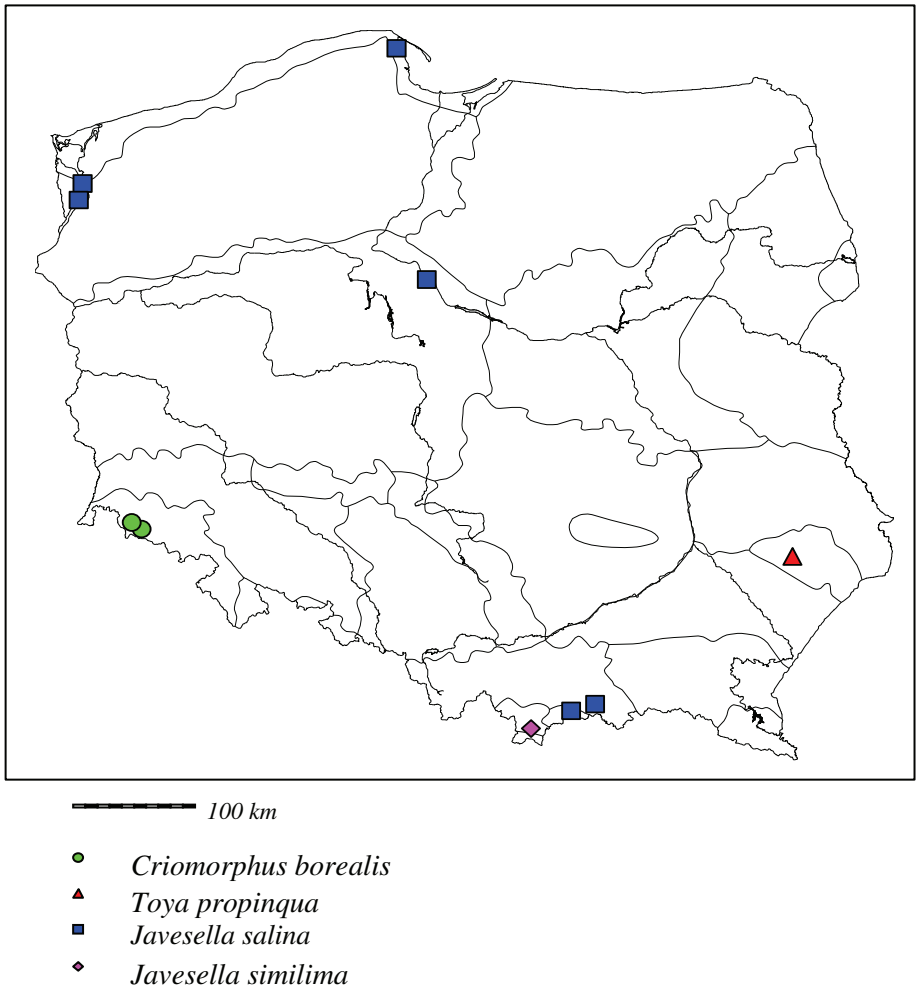


Figure 13.

Criomorphus borealis (J. SAHLBERG, 1871) – Localities: Western Sudetes Mts: Szklarska Poręba ad Jelenia Góra, Izerskie Mts (NAST 1973) – Siberian; *Calamagrostis villosa*, *C. canescens*; 2nd degree monophagous; nymph; 1 [Fig. 13]

Toya propinqua (FIEBER, 1866) – Localities: Roztocze: Zwierzyniec-Florianka ad Zamość, leg I. DWORAKOWSKA (NAST 1976b) – Cosmopolitan; *Cynodon dactylon* (and others?); 1st degree oligophagous?; nymph; 2? [Fig. 13]

Javesella salina (HAUPT, 1924) – Localities: Baltic Coast: Święta ad Goleniów (WAGNER 1941), Wielka Wieś ad Puck (SMRECZYŃSKI 1954); Pomeranian Lake District: Szczecin (WAGNER 1941); Wielkopolsko-Kujawska Lowland: Ciechocinek ad Aleksandrów Kujawski (NAST 1976b); Western Beskidy Mts: Rytro ad Nowy Sącz (SMRECZYŃSKI 1954); Pieniny Mts: Krościenko (SMRECZYŃSKI 1954, NAST 1976a) – Kazakh?; *Puccinellia distans*?, *Briza media*?, *Juncus gerardi*?; 1st degree monophagous?; nymph; 1? [Fig. 13]

Javesella similima (LINNAVUORI, 1948) – Localities: Tatra Mts: Dolina Strążyska (NAST 1976b) – Siberian (north); *Eriophorum angustifolium*, *Carex*?; 1st degree oligophagous?; nymph; 1 [Fig. 13]

Ribautodelphax pungens (RIBAUT, 1953) – Localities: Małopolska Upland: Wełecz ad Busko-Zdrój, Nat. Reserv.: 'Krzyżanowice', 'Skotniki Górne' and 'Grabowiec' ad Pińczów (NAST 1973, GĘBICKI 1987); Krakowsko-Wieluńska Upland: Mstów ad Częstochowa (ŚWIERCZEWSKI, GĘBICKI 2004) – European; *Brachypodium pinnatum*; 1st degree monophagous; nymph; 2 [Fig. 14]

Tettigometra atra HAGENBACH, 1825 – Localities: Upper Silesia: Chełmek ad Chrzanów (ŁOMNICKI 1884, STOBIECKI 1886, 1915); Małopolska Upland: Kielce-Szydłówek (NAST 1938a), Sobków ad Jędrzejów (NAST 1973) – Western Palaearctic; ?; polyphagous?; adult; 1 [Fig. 14]

Tettigometra fusca FIEBER, 1865 – Localities: Beskid Wchodni: Lesko (NAST 1973) – Western Palaearctic?; ?; polyphagous?; adult; 1 [Fig. 14]

Tettigometra virescens (PANZER, 1799) – Localities: Wielkopolsko-Kujawska Lowland: Wielkopolski National Park (NAST 1976b); Mazovian Lowland: Kozienicka Forest (WAGA 1857), Strumiany and Teresin ad Sochaczew (SMRECZYŃSKI 1954); Krakowsko-Wieluńska Upland: Ojców ad Olkusz (WAGA 1857), Kraków (ŁOMNICKI 1884, STOBIECKI 1886, 1915, SMRECZYŃSKI 1906a); Małopolska Upland: Skowronno ad Pińczów (NAST 1976b); Świętokrzyskie Mts: Cisów and Widełki ad Kielce (NAST 1938a);

Roztocze: Szczebrzeszyn ad Zamość (NAST 1976b); Sandomierska Lowland: Kozłów ad Dębica (SMRECZYŃSKI 1954); Western Beskidy Mts: Gruszów ad Limanowa (STOBIECKI 1915) – Mediterranean; ?; polyphagous?; adult; 1 [Fig. 14]

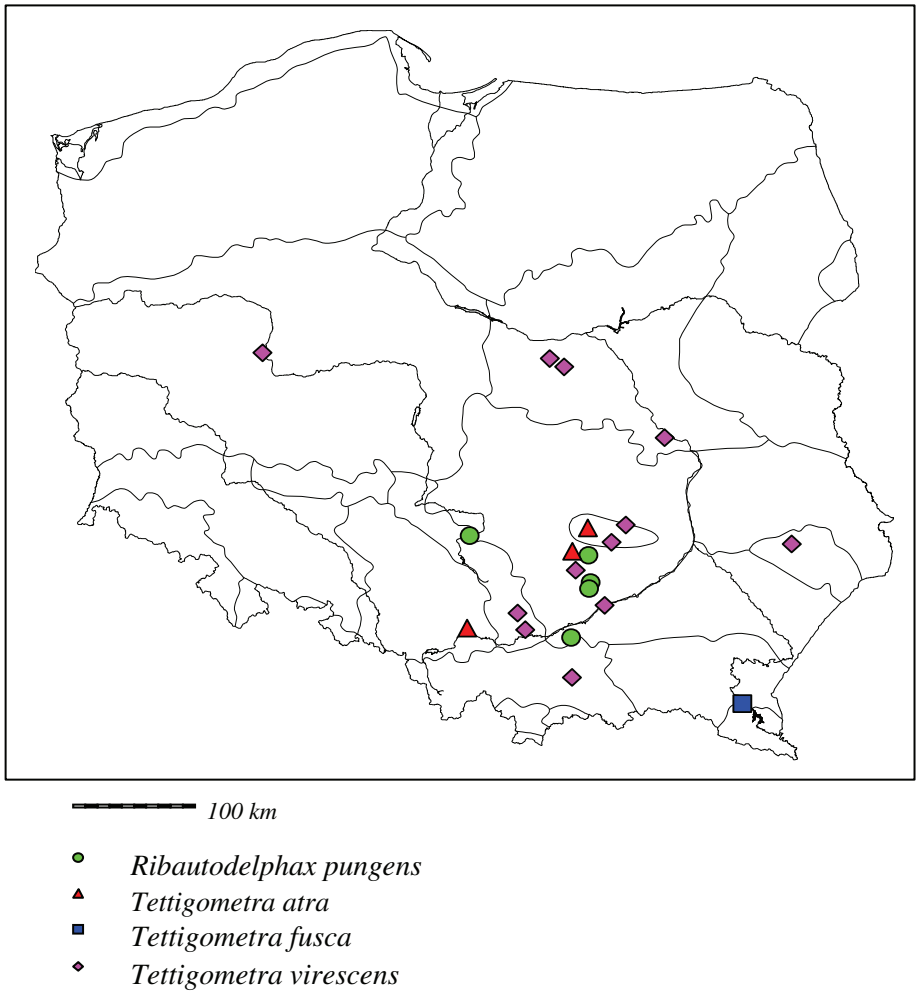


Figure 14.

Issus coleoptratus (FABRICIUS, 1781) – Localities: Lower Silesia: Srebrna Góra ad Ząbkowice Ślaskie (NAST 1973); Eastern Sudetes Mts: Wleń ad Jelenia Góra (NAST 1973); <<Silesia>> (WEIGEL 1806) – Mediterranean?; deciduous woody plants; polyphagous; nymph; 1 [Fig. 15]

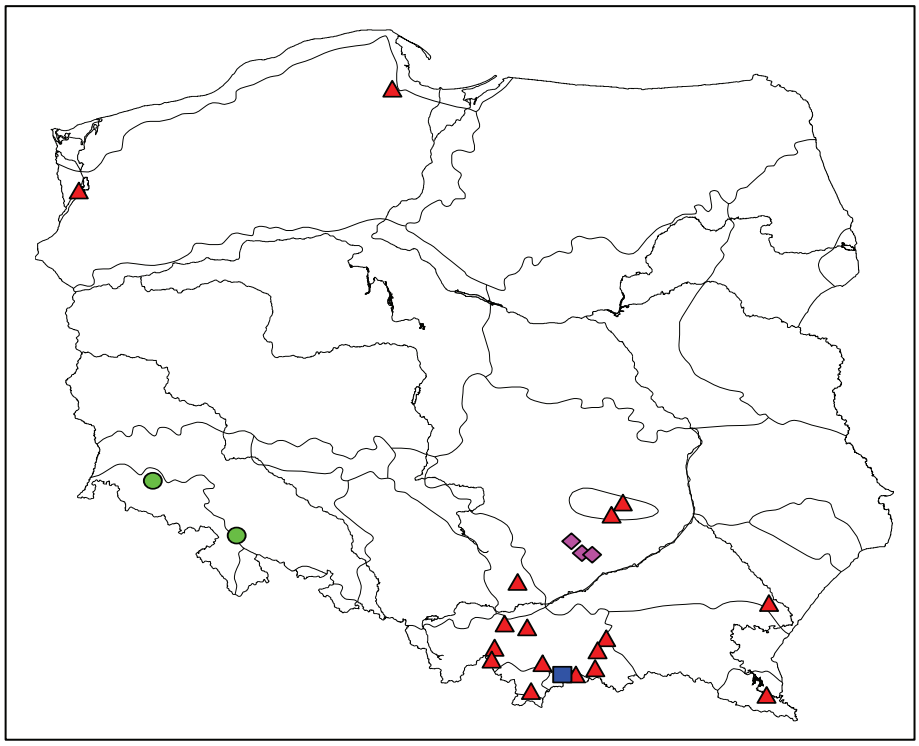


Figure 15.

Issus muscaeformis (SCHRANK, 1781) – Localities: Pomeranian Lake District: Żukowo ad Kartuzy (MATSUMURA 1906), Szczecin (WAGNER 1941); Krakowsko-Wieluńska Upland: Ojców ad Olkusz (WAGA 1854a, 1854b, 1857, SMRECZYŃSKI 1954); Świętokrzyskie Mts: Cisów ad Kielce (NAST 1938a), Świętokrzyski National Park (NAST 1973); Western Beskidy Mts: Gorce (SMRECZYŃSKI 1910a), Zawoja ad Sucha Beskidzka (STOBIECKI 1915), Rytro ad Nowy Sącz (STOBIECKI 1915, NAST 1973), Jasienna and Piwniczna ad Nowy Sącz, Kalwaria ad Wadowice, Myślenice (SMRECZYŃSKI 1954), Babia Góra (NAST 1955); Eastern Beskidy Mts: Pawłosiów ad Jarosław (STOBIECKI 1915); Bieszczady Mts (NAST 1955, 1973); Pieniny Mts

(SMRECZYŃSKI 1954, NAST 1973, NAST 1976a); Tatra Mts (SMRECZYŃSKI 1954) – European; *Quercus*?, *Corylus avellana*?; polyphagous?; nymph; 1 [Fig. 15]

Lyristes plebejus (SCOPOLI, 1763) – Localities: Pieniny Mts (SIMM 1948, SMRECZYŃSKI 1954) – Mediterranean; deciduous woody plants and shrubs; polyphagous; nymph; 1 [Fig. 15]

Cicadetta concinna (GERMAR, 1821) [syn. *Cicadetta podolica* (EICHWALD, 1830)] – Localities: Małopolska Upland: Nat. Reserv. 'Krzyżanowice' ad Pińczów (KOSTROWICKI, NAST, 1952, KOSTROWICKI 1953, NAST 1955, CELIŃSKI, FILIPEK, 1957, GĘBICKI 1987), Nida River valley (KOSTROWICKI 1954, 1966), Nat. Reserv. 'Chotel Czerwony' ad Busko Zdrój (BŁESZYŃSKI, SZYMCZAKOWSKI 1954, 1955) – Kazakh; dicotyledonous plants; polyphagous; nymph; 1 [Fig. 15]

Cicadetta montana **complex** – Localities: Pomeranian Lake District: Bielinek ad Chojna (HAUPT 1935, CELIŃSKI, FILIPEK 1957); Mazovian Lowland: Hulanka ad Brzeziny (NAST 1936); Białowieża Forest (KARPIŃSKI 1949, 1958); Lower Silesia (LETZNER 1885); Krakowsko-Wieluńska Upland: Kraków-Bielany, Grodzisko ad Olkusz (SMRECZYŃSKI 1954), Ojców ad Olkusz (SZWEDO 1992); Małopolska Upland: Młodzawy ad Pińczów (NAST 1976b); Lubelska Upland: Bochotnica ad Puławy (NAST 1976b); Western Beskidy Mts: Ponice ad Nowy Targ, Rytro ad Nowy Sącz (SMRECZYŃSKI 1906a), Gorce (NAST 1936); Pieniny Mts (SMRECZYŃSKI 1906a, NAST 1936, NAST. 1976a) – ?; deciduous woody plants; polyphagous; nymph; <1/2 [Fig. 16]

Cicadetta cantilatrix SUEUR et PUISSANT, 2007 – Localities: Małopolska Upland: Nat. Reserv. 'Polana Polichno' ad Pińczów; Ojcowski National Park (TRILAR et al., 2006, SUEUR, PUISSANT, 2007) – European; deciduous woody plants and shrubs; polyphagous; nymph; 1 [Fig. 16]

Peuceptyelus coriaceus (FALLÉN, 1826) – Localities: Białowieża Forest: Białowieski National Park (KARPIŃSKI 1958) – Siberian; *Picea abies* (adult), dicotyledonous herbs (nymph); 1st degree monophagous; adult; 1 [Fig. 16]

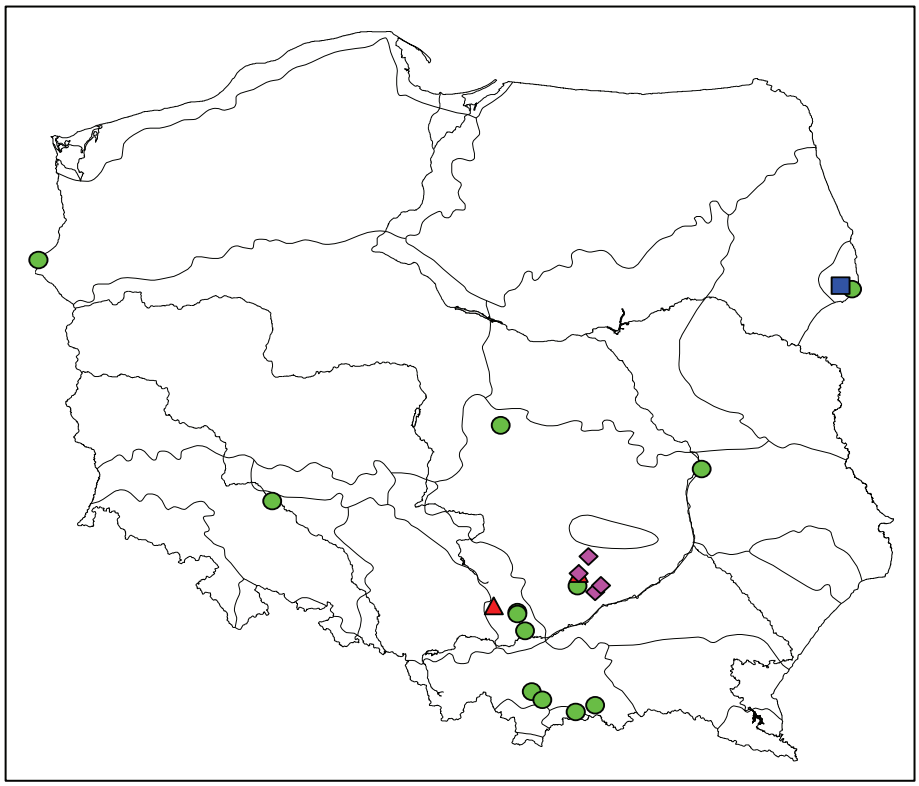


Figure 16.

Neophilaenus albipennis (FABRICIUS, 1798) – Localities: Małopolska Upland: Nat. Reserv. 'Chotel Czerwony' ad Busko Zdrój (SMRECZYŃSKI 1954), Nat. Reserv.: 'Grabowiec' ad Pińczów and 'Skotniki Górne' ad Busko Zdrój (NAST 1955), Pińczów (GĘBICKI 1987) – European; *Brachypodium pinnatum*; 1st degree monophagous; egg; 1 [Fig. 16]

Aphrophora major UHLER, 1896 [syn. *Aphrophora alpina* MELICHAR, 1900] – Localities: Masurian Lake District: Bagna Kuwaskie ad Grajewo (ANDRZEJEWSKA 1965); Białowieża Forest (NAST 1936, SMRECZYŃSKI

1954) – Siberian; *Salix*, *Betula*? (adult), dicotyledonous herbs (nymph); polyphagous; egg; 1 [Fig. 17]

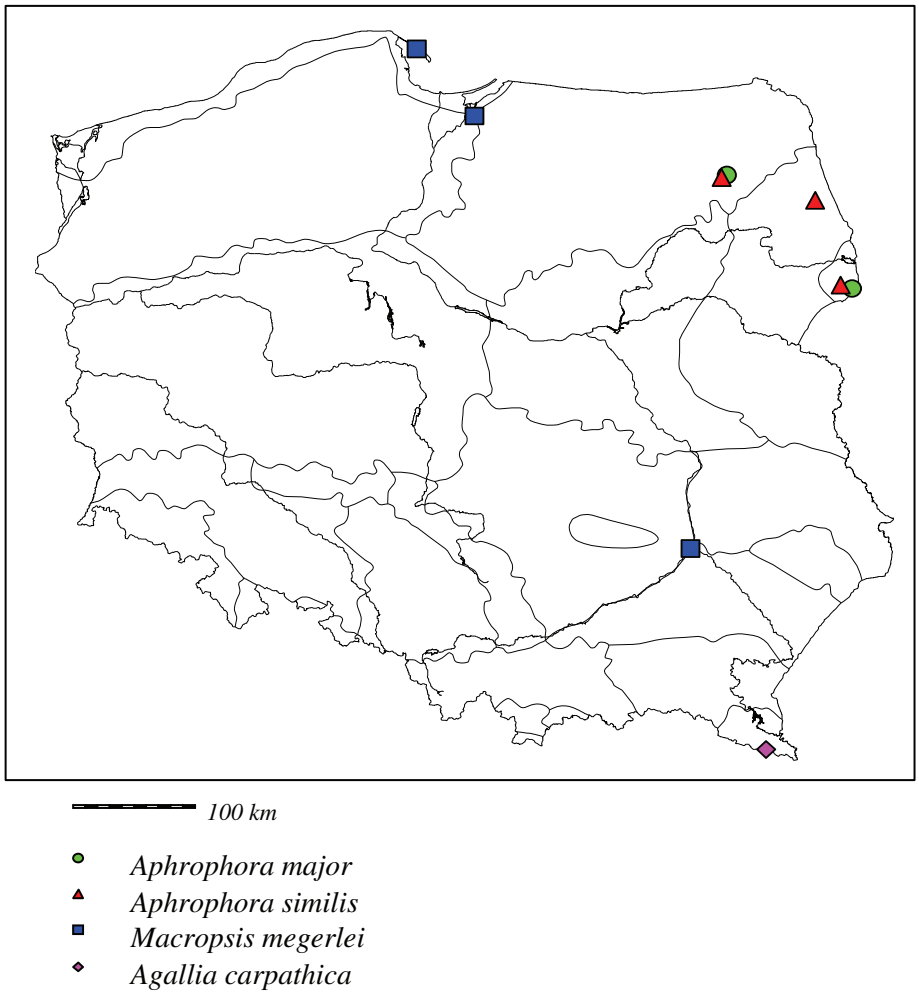


Figure 17.

Aphrophora similis LETHIERRY, 1888 – Localities: Masurian Lake District: Bagna Kuwaskie ad Grajewo (NAST 1955); Białowieża Forest (SMRECZYŃSKI 1954, NAST 1955); Podlasie: Dolistowo (GĘBICKI et al. 1982) – Siberian with isolated localities in Central Europe; deciduous woody plants?; polyphagous?; egg?; 1? [Fig. 17]

Macropsis megerlei (FIEBER, 1868) – Localities: Baltic Coast: Elbląg (MATSUMURA 1906), Jastarnia ad Puck (ENDERLEIN 1908); Małopolska Upland: Góry Pieprzowe ad Sandomierz (NAST 1955) – Western Palaearctic; *Rosa rubiginosa*, *R. spinosissima*; 2nd degree monophagous; egg; 1 [Fig. 17]

Agallia carpathica MELICHAR, 1898 – Localities: Bieszczady Mts: Kamienna (NAST 1973) – European high mountains; Asteraceae, Fabaceae?; 2nd degree oligophagous?; egg?; 1 [Figure 17]

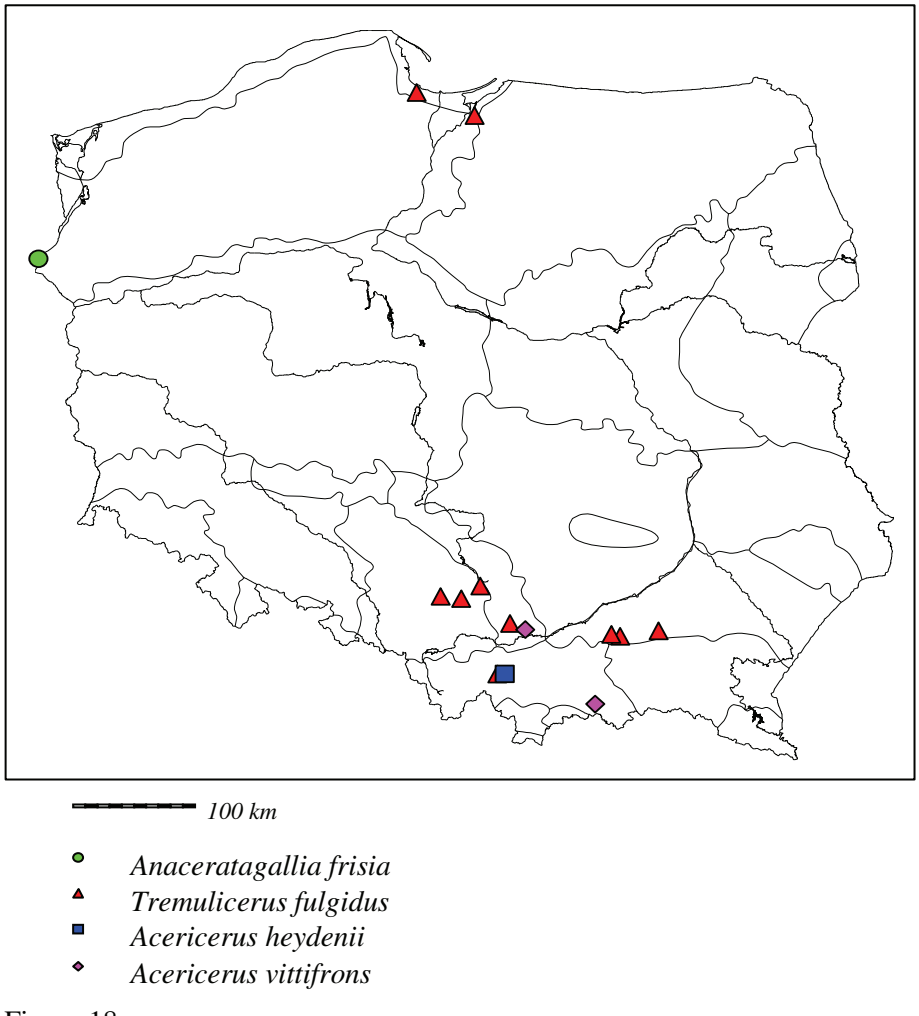


Figure 18.

Anaceratagallia frisia (WAGNER, 1939) – Localities: Pomeranian Lake District: Bielinek ad Chojna (SCHIEMENZ 1969) – Western European; Fabaceae?, *Thymus*?; 2nd degree oligophagous?; adult; 1? [Fig. 18]

Tremulicerus fulgidus (FABRICIUS, 1775) – Localities: Baltic Coast: Gdańsk, Elbląg (MATSUMURA 1906); Krakowsko-Wieluńska Upland: Kraków (SMRECZYŃSKI 1906a, 1954); Upper Silesia: Dąbrowa Górnicza, Łazy, Bytom (GĘBICKI 1979 and unpubl. data); Sandomierska Lowland: Tarnów, Chyszów ad Tarnów, Pustynia ad Dębica (SMRECZYŃSKI 1954); Western Beskidy Mts: Maków Podhalański (SMRECZYŃSKI 1910b) – Western Palaearctic; *Populus nigra*, hybrids ?; 1st degree monophagous; adult; 1 [Fig. 18]

Acericerus heydenii (KIRSCHBAUM, 1868) – Localities: Western Beskidy Mts: Maków Podhalański ad Sucha Beskidzka (SMRECZYŃSKI 1954) – European; *Acer pseudoplatanus* (and other *Acer* species); 2nd degree monophagous; adult; 1 [Fig. 18]

Acericerus vittifrons (KIRSCHBAUM, 1868) – Localities: Krakowsko-Wieluńska Upland: Kraków (ŁOMNICKI 1884); Western Beskidy Mts: Rytro ad Nowy Sącz (SMRECZYŃSKI 1954) – European; *Acer campestre* (and other *Acer* species); 2nd degree monophagous; adult; 1 [Fig. 18]

Metidiocerus rutilans (KIRSCHBAUM, 1868) – Localities: Krakowsko-Wieluńska Upland: Kraków (SMRECZYŃSKI 1954); Upper Silesia: Błędów ad Dąbrowa Górnicza (JASIŃSKA 1980); Western Beskidy Mts: Myślenice (SMRECZYŃSKI 1954); Nowotarska Dale: Nowy Targ, Zakopane (SMRECZYŃSKI 1954) – Eurosiberian; *Salix* spp.; 2nd degree monophagous; adult; 1 [Fig. 19]

Balcanocerus larvatus (HERRICH–SCHÄFFER, 1835) – Localities: Małopolska Upland: Góry Pieprzowe ad Sandomierz (SMRECZYŃSKI 1955) – South European; *Prunus spinosa*; 1st degree monophagous; adult; 1 [Fig. 19]

Aphrodes aestuarina EDWARDS, 1908 – Localities: Baltic Coast (MATSUMURA, 1906, ENDERLEIN 1908, SCHMIDT 1912, KARL 1935, WAGNER 1941, SMRECZYŃSKI 1954) – Western European; ?; polyphagous?; egg; 1. This species was treated by NAST as a synonym of *Aphrodes bicincta*[11]. NICKEL suggests that it might be only a subspecies or ecological form of *Aphrodes makarovi* ZACHVATKIN, 1948[14]. The localities from the Polish Baltic Coast probably refer to this species. [Fig. 19]

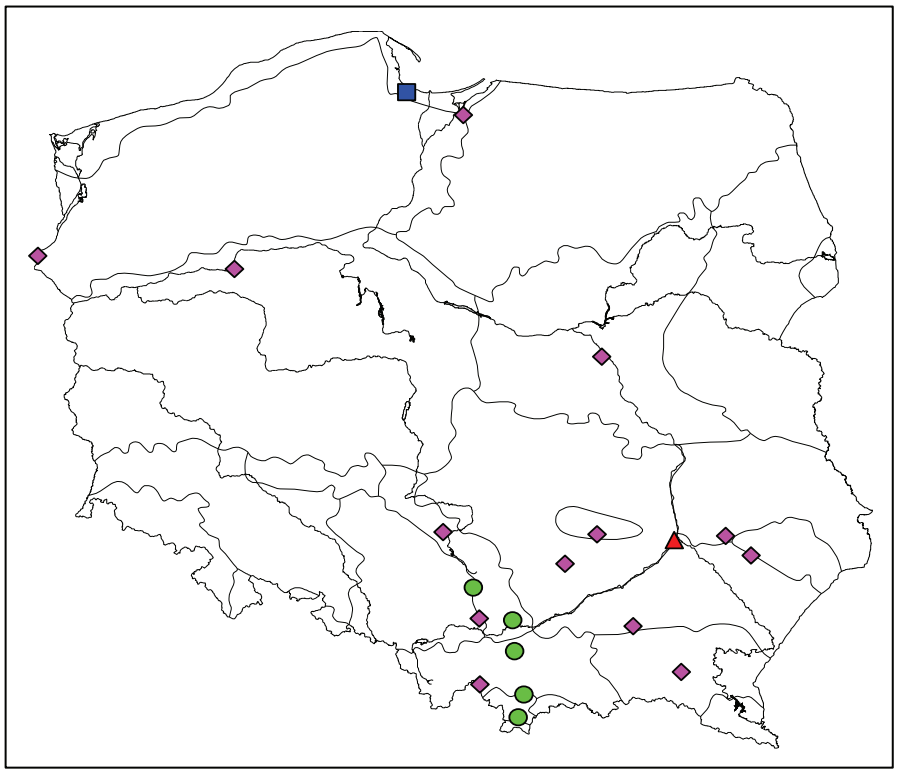


Figure 19.

Anoscopus histrionicus (FABRICIUS, 1794) – Localities: Baltic Coast (KARL 1935, WAGNER 1941); Pomeranian Lake District (MATSUMURA 1906, SCHMIDT 1912, WAGNER 1941); Wielkopolsko-Kujawska Lowland (SZULCZEWSKI 1933, SMRECZYŃSKI 1954, GROMADZKA 1970); Mazovian Lowland (SMRECZYŃSKI 1954); Upper Silesia (SZULCZEWSKI 1931); Krakowsko-Wieluńska Upland (SMRECZYŃSKI 1906a, 1954); Małopolska Upland (NAST 1973); Świętokrzyskie Mts (NAST 1938a); Lubelska Upland (TENENBAUM 1921); Roztocze (TENENBAUM 1921); Sandomierska Lowland (STOBIECKI 1915, KRASUCKI 1919, SMRECZYŃSKI

1954); Western Beskidy Mts (SMRECZYŃSKI 1906a, 1954); Eastern Beskidy Mts (STOBIECKI 1915); <<Prussia>> (BRISCHKE 1871) – Western Palaearctic; Poaceae?; 1st degree oligophagous?; egg; 1 [Fig. 19]

Stroggylocephalus livens (ZETTERSTEDT, 1840) – Localities: Baltic Coast: Karpin ad Szczecin, Słupsk (WAGNER 1941); Mazovian Lowland: Czarna Struga ad Radzymin (NAST 1938b); Białowieża Forest: Białowieski National Park (KARPIŃSKI 1958) – Siberian; *Carex*?, *Eriophorum*?; 2nd degree monophagous?; adult?; 1? [Fig. 20]

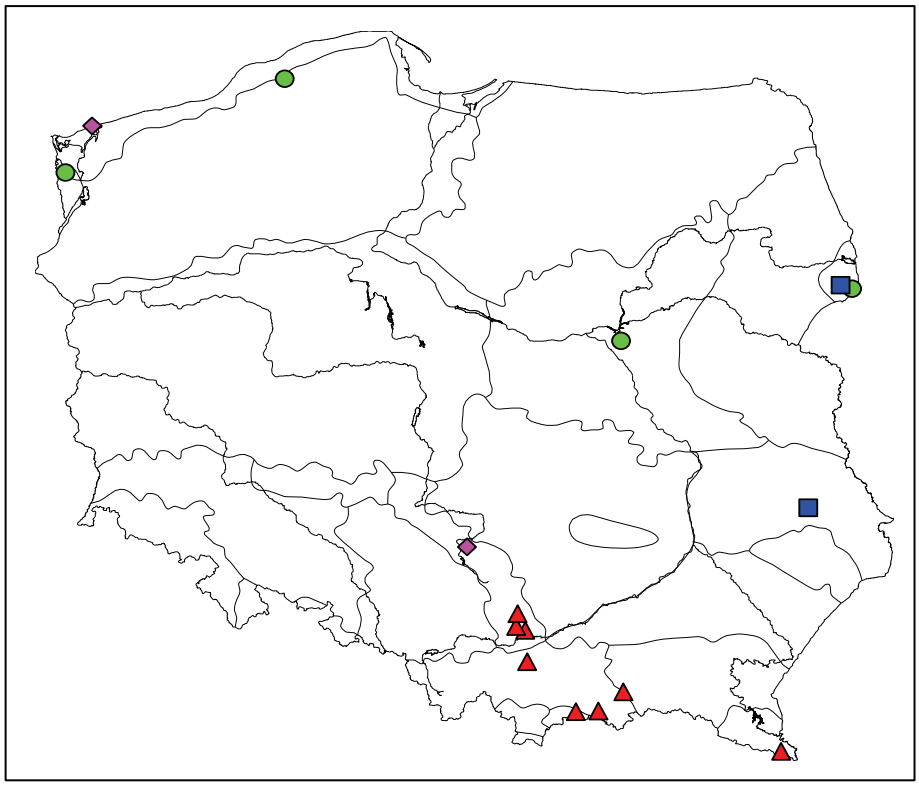


Figure 20.

Erythria montandoni (PUTON, 1880) – Localities: Krakowsko-Wieluńska Upland: Kraków-Las Wolski (SMRECZYŃSKI 1954), Ojców ad Olkusz (SZWEDO 1992); Western Beskidy Mts: Góra Chełm ad Nowy Sącz (SMRECZYŃSKI 1910b), Piwniczna ad Nowy Sącz, Myślenice (SMRECZYŃSKI 1954); Bieszczady Mts: Tarnica Mt. (NAST 1973); Pieniny Mts (SMRECZYŃSKI 1954); European high mountains; *Lamiaceae*?; 1st degree oligophagous?; adult?; 1? [Fig. 20]

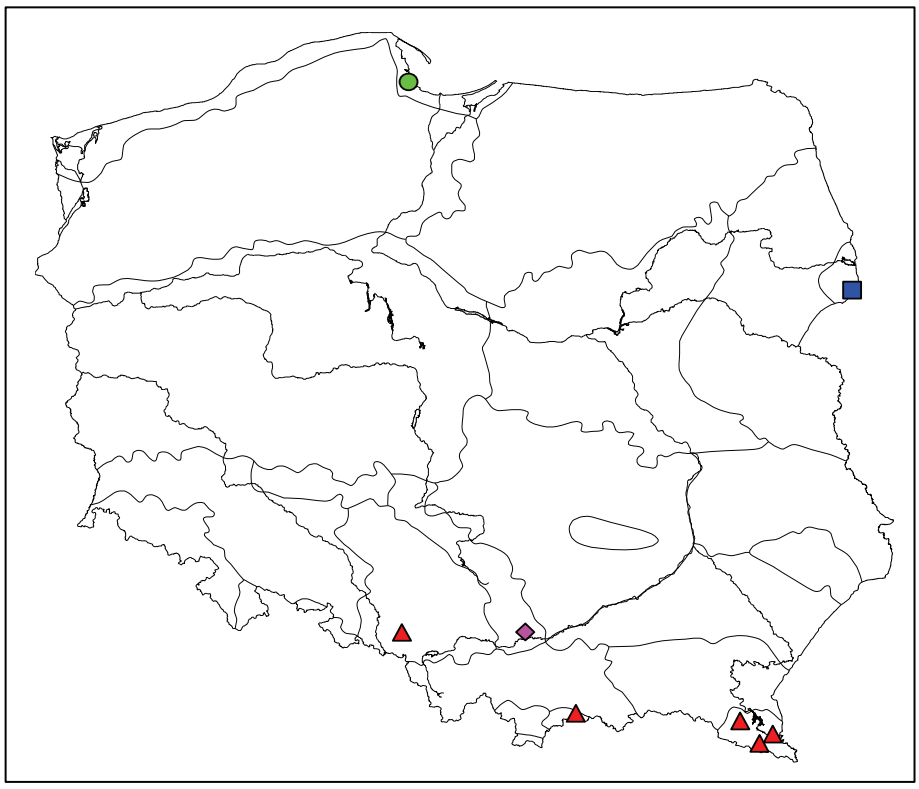


Figure 21.

Micantulina micantula (ZETTERSTEDT, 1840) – Localities: Białowieża Forest (NAST 1973); Lubelska Upland: Krasnystaw, leg. I. DWORAKOWSKA 1967 (ŚWIERCZEWSKI, GĘBICKI 2003) – Eurosiberian; *Thalictrum minus* (and others?); 1st degree monophagous?; adult; 1? [Fig. 20]

Wagneriala incisa (THEN, 1897) – Localities: Baltic Coast: Międzywodzie ad Wolin (WAGNER 1955); Krakowsko-Wieluńska Upland: Olsztyn ad Częstochowa (ŚWIERCZEWSKI, GĘBICKI 2004) – South European; *Carex montana* (and others?); 2nd degree monophagous?; egg; 1? [Fig. 20]

Wagneriala minima (J.SAHLBERG, 1871) – Localities: Baltic Coast: Sopot (MATSUMURA 1906) – Siberian?; *Carex humilis* (and others?); 2nd degree monophagous? egg?; 1? [Fig. 21]

Kybos strobli (WAGNER, 1949) – Localities: Upper Silesia: Rybnik (ZIMOŃ 1986, unpubl.); Bieszczady Mts: Wetlina, Baligród ad Lesko, Dwernik ad Ustrzyki Dolne; Pieniny Mts (DWORAKOWSKA 1973, NAST 1976a) – European high mountains; *Alnus incana*?; 1st degree monophagous?; egg; 2? [Fig. 21]

Empoasca kontkaneni OSSIANNILSSON, 1949 – Localities: Białowieża Forest (KARPIŃSKI 1958, NAST 1976b) – Siberian; deciduous woody plants; polyphagous; adult; 1 [Fig. 21]

Edwardsiana smreczynskii DWORAKOWSKA, 1971 – Localities: Krakowsko-Wieluńska Upland: Kraków (DWORAKOWSKA 1971) – European; *Ulmus laevis*? *U. minor*?; 1st degree monophagous?; egg; 2 [Fig. 21]

Eupteryx lelievrei (LETHIERRY, 1874) – Localities: Upper Silesia: Oświęcim-Brzezinka (JEDYNOWICZ 2008, unpubl.); Krakowsko-Wieluńska Upland: Częstochowa (WALCZAK 2007, unpubl.) – European; *Betonica officinalis*; 1st degree monophagous; egg; 2 [Fig. 22]

Eupteryx thoulessi EDWARDS, 1926 – Localities: Lower Silesia (WAGNER, FRANZ 1961) – European; *Mentha aquatica*, *Lycopus europaeus*; 1st degree oligophagous; egg; 2 [Fig. 22]

Aguriahana pictilis (STÅL, 1853) – Localities: Masurian Lake District: Wigry ad Suwałki (NAST 1938b); Białowieża Forest (DWORAKOWSKA 1972) – Siberian; *Betula pubescens*?, *Vaccinium myrtillus*?; 1st degree monophagous?; egg?; 1? [Fig. 22]

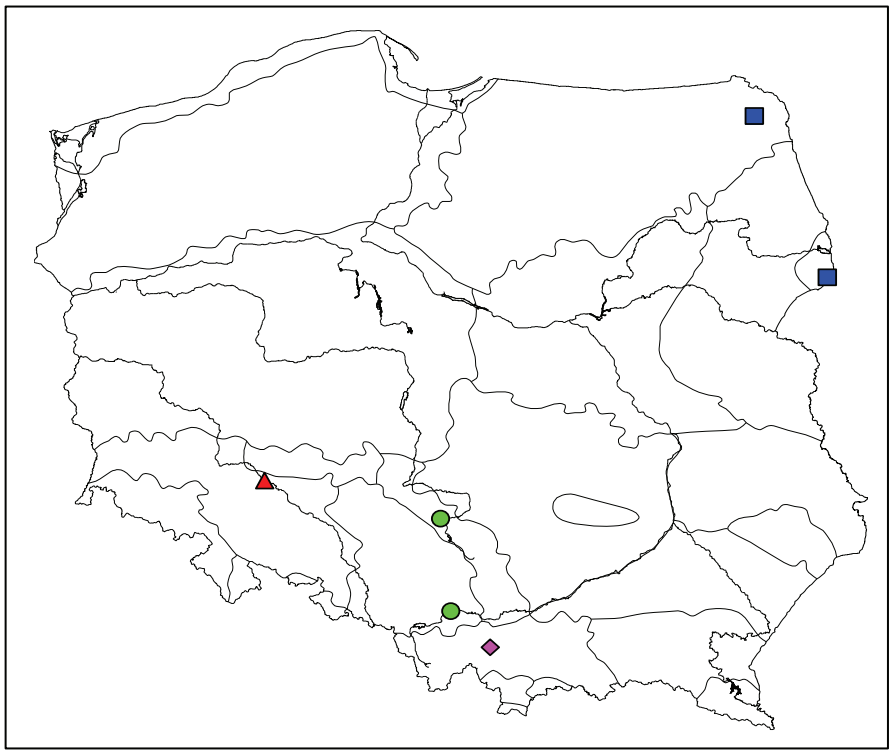


Figure 22.

Zyginella pulchra LÖW, 1885 – Localities: Western Beskidy Mts: Maków Podhalański ad Sucha Beskidzka (SMRECZYŃSKI 1906b, DWORAKOWSKA 1970c) – South European; *Acer* spp.; 2nd degree monophagous; adult; 1 [Fig. 22]

Hauptidia distinguenda (KIRSCHBAUM, 1868) – Localities: Pieniny Mts: Homole (DWORAKOWSKA 1970b) – Mediterranean; *Geranium robertianum*?; 1st degree monophagous?; adult; 1 [Fig. 23]

Arboridia kratochvili (LANG, 1945) – Localities: Małopolska Upland: Nat. Reserv. 'Krzyżanowice' ad Pińczów (NAST 1955, DWORAKOWSKA 1970a)

– South European; *Potentilla tabernaemontani* (and others?); 1st degree monophagous?; egg?; 2? [Fig. 23]

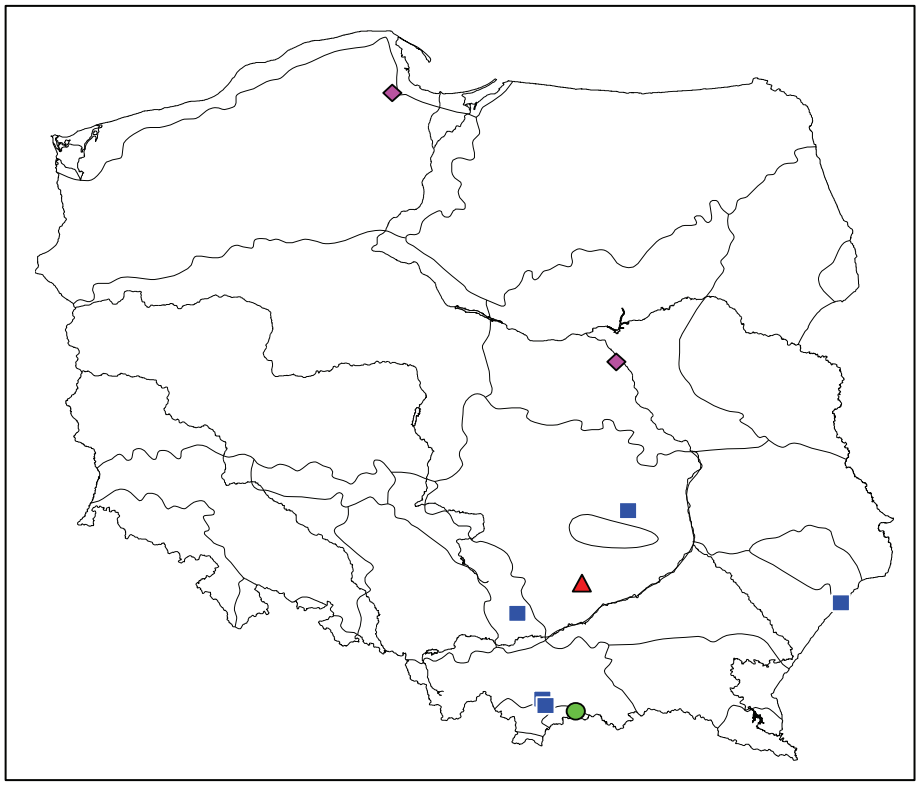


Figure 23.

Goniagnathus brevis (HERRICH–SCHÄFFER, 1835) – Localities: Krakowsko-Wieluńska Upland: Ojców ad Olkusz (SMRECZYŃSKI 1954); Małopolska Upland: Michałów ad Pińczów (NAST 1973); Sandomierska Lowland: Dziewięcierz ad Lubaczów (NAST 1973); Western Beskidy Mts: Gorce (SMRECZYŃSKI 1910a); Nowotarska Dale: Łopuszna ad Nowy Targ (STOBIECKI

1915) – Western Palaearctic; *Thymus pulegioides*, *T. praecox* (and others?); 2nd degree monophagous?; adult; 1 [Fig. 23]

Circulifer haematoceps (MULSANT et REY, 1855) – Localities: Pomeranian Lake District: Żukowo ad Kartuzy (MATSUMURA 1906); Mazovian Lowland: Warszawa-Młociny (NAST 1955) – Western Palaearctic; *Artemisia*?, *Sedum*?; polyphagous?; adult?; 1? [Fig. 23]

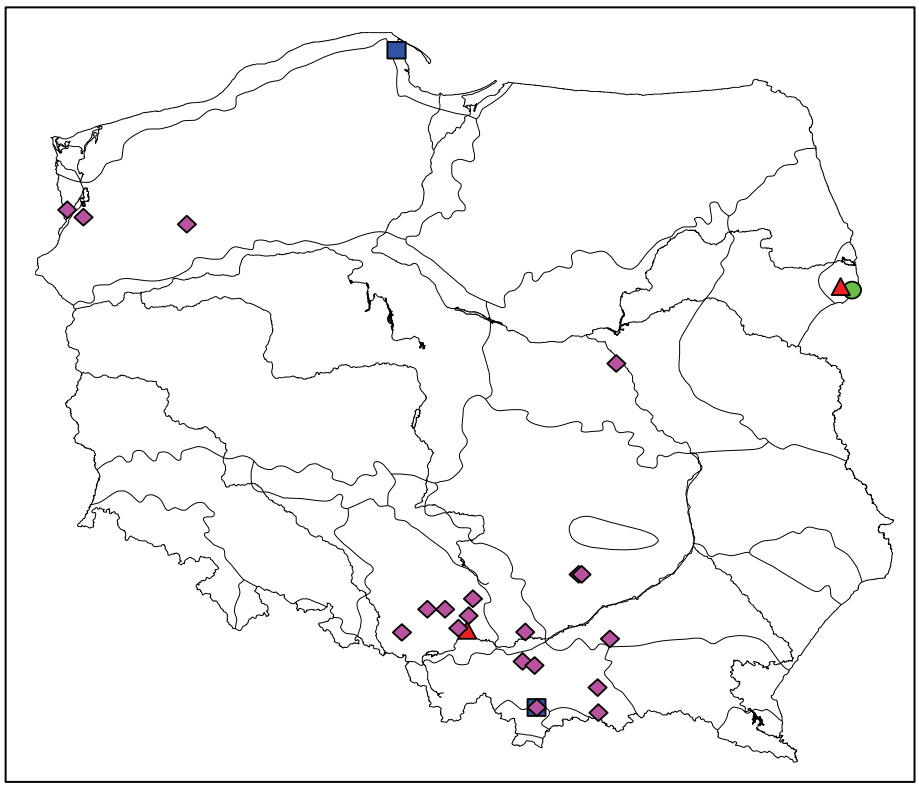


Figure 24.

Coryphaelus gyllenhalii (FALLÉN, 1826) – Localities: Białowieża Forest: Białowieża (NAST 1973) – Kazakh?; *Schoenplectus lacustris*; 1st degree monophagous; egg; 1 [Fig. 24]

Erotettix cyane (BOHEMAN, 1845) – Localities: Białowieża Forest: Białowieża (GAJEWSKI 1961); Upper Silesia: Chełmek ad Chrzanów (STOBIECKI 1915, KRASUCKI 1922) – Siberian; *Potamogeton natans*, *Nuphar lutea*, *Nymphaea alba*; 2nd degree oligophagous; egg; 1 [Fig. 24]

Macrosteles lividus (EDWARDS, 1894) – Localities: Baltic Coast: Wielka Wieś ad Puck (SMRECZYŃSKI 1954); Nowotarska Dale: Nowy Targ (SMRECZYŃSKI 1954, GAJEWSKI 1961) – Siberian; *Eleocharis palustris*, *E. uniglumis*?; 2nd degree monophagous?; egg; 2 [Fig. 24]

Macrosteles maculosus (THEN, 1897) – Localities: Pomeranian Lake District: Siadło Dolne ad Szczecin, Knieja Bukowa (WAGNER 1941), Kalisz Pomorski (GĘBICKI 1980, unpubl.); Mazovian Lowland: Warszawa (GAJEWSKI 1961); Krakowsko-Wieluńska Upland: Kraków (STOBIECKI 1915, SMRECZYŃSKI 1954, GAJEWSKI 1961); Upper Silesia: Katowice, Rybnik, Łosień, Błędów, Pszczyna, Jaworzno-Szczakowa, Ruda Śląska (JASIŃSKA 1980 and unpubl. data); Małopolska Upland: vicinity of Pińczów (NAST 1955, GAJEWSKI 1961), Włochy ad Pińczów (GĘBICKI 1987); Western Beskidy Mts: Trzemeśna ad Myślenice (STOBIECKI 1915), Myślenice, Nowy Sącz, Piwniczna ad Nowy Sącz, Bogumiłowice ad Tarnów (SMRECZYŃSKI 1954); Nowotarska Dale: Nowy Targ (SMRECZYŃSKI 1954) – South European; *Polygonum aviculare* (and others?); 1st degree monophagous; egg; 2 [Fig. 24]

Macrosteles sordidipennis (STÅL, 1858) – Localities: Pomeranian Lake District: Kalisz Pomorski (GĘBICKI 1980, unpubl.); Wielkopolsko-Kujawska Lowland: Solno, Rąbinek, Mątwy ad Inowrocław (NAST 1955), Ciechocinek ad Aleksandrów Kujawski (GAJEWSKI 1961); Małopolska Upland: Owczary ad Busko-Zdrój (NAST 1955), Szczerbaków ad Pińczów (GAJEWSKI 1961); Western Beskidy Mts: Barycz near Wieliczka ad Kraków (SMRECZYŃSKI 1954) – Holarctic; *Puccinellia distans*, *Juncus gerardi*?; 1st degree monophagous?; egg; 2 [Fig. 25]

Sonronius binotatus (J. SAHLBERG, 1871) – Localities: Western Beskidy Mts: Maków Podhalański (SMRECZYŃSKI 1910b), Gorce (SMRECZYŃSKI 1910a, 1910b), Zawoja ad Sucha Beskidzka (STOBIECKI 1915), Piwniczna ad Nowy Sącz (SMRECZYŃSKI 1954); Nowotarska Dale: Zakopane (SMRECZYŃSKI 1954); Pieniny Mts (SMRECZYŃSKI 1954); Tatra Mts

(SMRECZYŃSKI 1954) – Siberian; *Epilobium angustifolium* (and others?); 2nd degree monophagous; egg; 1 [Fig. 25]

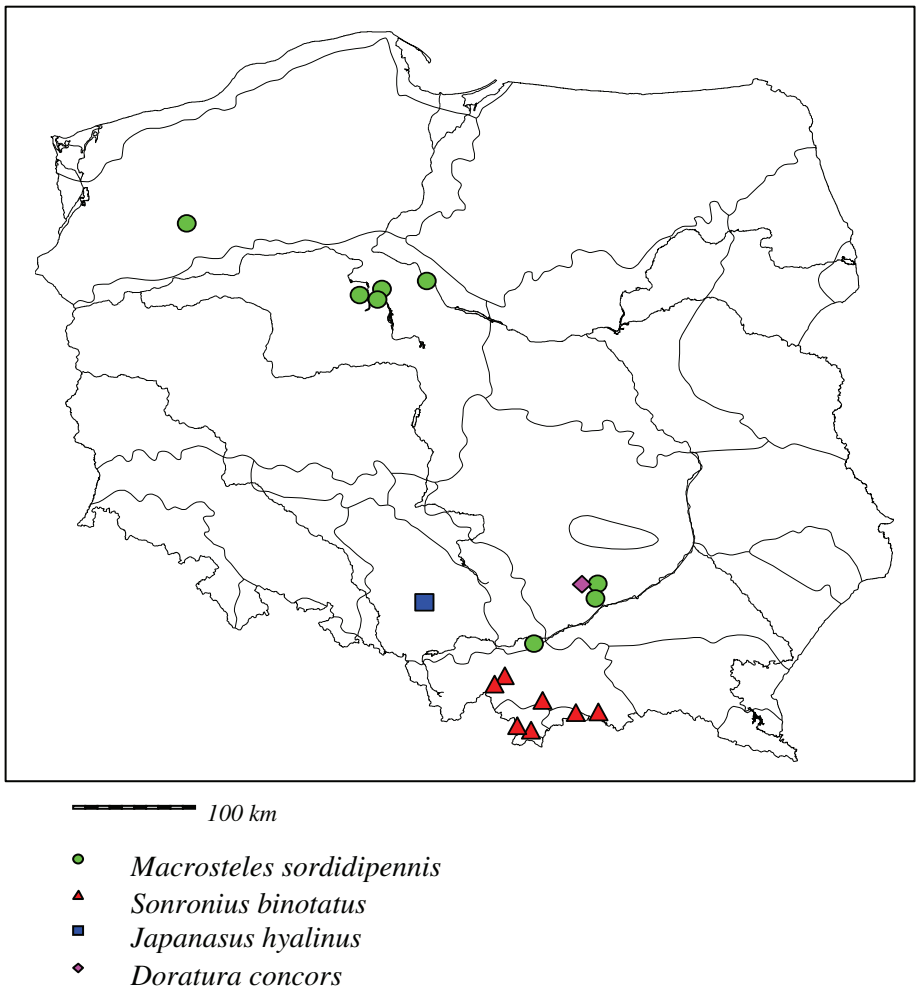


Figure 25.

Japananus hyalinus (OSBORN, 1900) – Localities: Upper Silesia: Zabrze (MOKRZYCKA 2007, unpubl.) – Eurosiberian; *Acer campestre*, *Acer* spp.; 2nd degree monophagous; egg; 1 [Fig. 25]

Doratura concors HORVÁTH, 1903 – Localities: Małopolska Upland: Nat. Reserv. 'Krzyżanowice' ad Pińczów (NAST 1955, DWORAKOWSKA 1968, GĘBICKI 1987) – Kazakh; ?; ?; ?; ? [Fig. 25]

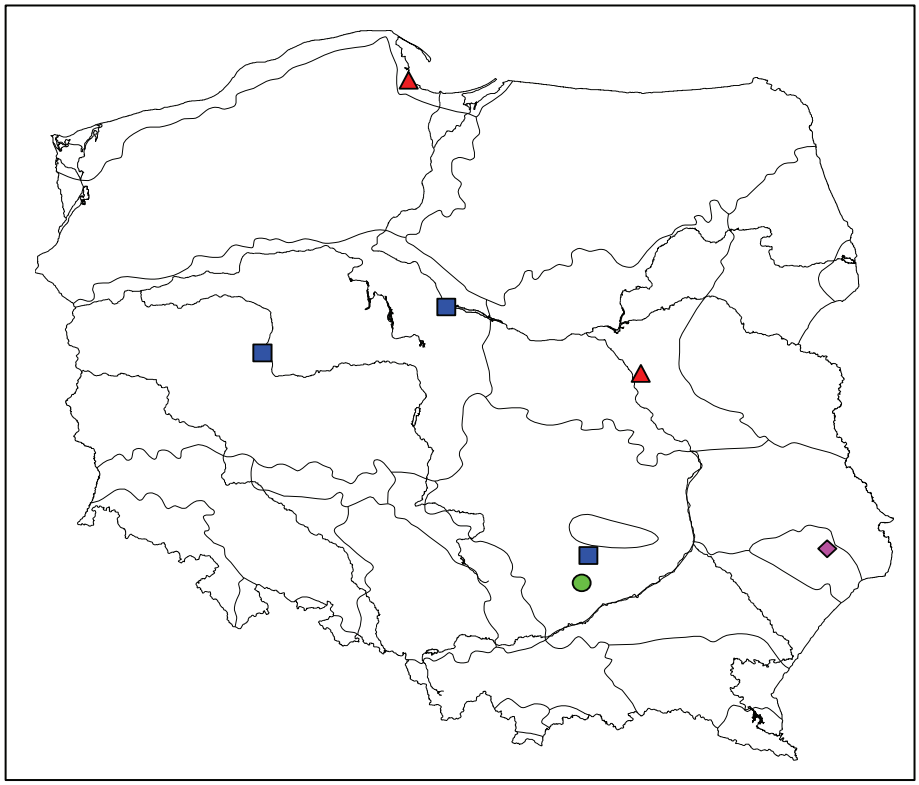


Figure 26.

Doratura horvathi WAGNER, 1939 – Localities: Małopolska Upland: Nat. Reserv. 'Krzyżanowice' ad Pińczów (NAST 1955, DWORAKOWSKA 1968, GĘBICKI 1987) – European; *Helictrotrichon pratensis;* 1st degree monophagous; egg; 1 [Fig. 26]

Platymetopius guttatus FIEBER, 1869 – Localities: Baltic Coast: Sopot (MATSUMURA 1906); Mazovian Lowland: Śródborów ad Otwock (NAST 1973); <<Silesia>> (WAGNER, FRANZ, 1961) – Western Palaearctic; *Betula pendula*, *Quercus* and others; polyphagous?; egg; 1 [Fig. 26]

Allygidius furcatus (FERRARI, 1882) – Localities: Wielkopolsko-Kujawska Lowland: Wielkopolski National Park, vicinity of Włocławek (NAST 1955); Małopolska Upland: Nat. Reserv. 'Grabowiec' ad Pińczów (NAST 1955); <<Silesia>> (WAGNER, FRANZ 1961) – Mediterranean; herbaceous plants and shrubs; polyphagous; egg ?; 1 ? [Fig. 26]

Allygidius mayri (KIRSCHBAUM, 1868) – Localities: Roztocze: Łabunie ad Zamość (NAST 1976b) – Mediterranean; herbaceous plants and shrubs; polyphagous; egg?; 1? [Fig. 26]

Anoplotettix horvathi METCALF, 1955 – Localities: Lubelska Upland (CHUDZICKA 2004) – Mediterranean; deciduous woody plants; polyphagous; nymph; 1 [Fig. 27]

Rhytistylus proceps (KIRCHBAUM, 1868) – Localities: Baltic Coast: Jarosławiec ad Sławno (NAST 1976b); Pomeranian Lake District: Żukowo ad Kartuzy (MATSUMURA 1906), Bielinek ad Chojna (HAUPT 1934, ENGEL 1938);Wielkopolsko-Kujawska Lowland: Dębice ad Włocławek (NAST 1938b); Mazovian Lowland: Warszawa and vicinities (NAST 1976b); Upper Silesia: Katowice, Pszczyna, Ruda Śląska (TARZAKOWSKA 1985 unpubl., KUCZIA 1987 unpubl.); Małopolska Upland: Michałów ad Pińczów (NAST 1976b), Włochy ad Pińczów (GĘBICKI 1987); Świętokrzyskie Mts: Krajno ad Kielce (NAST 1976b) – Western European; *Festuca ovina* (and others?); 1st degree monophagous?; egg; 1 [Fig. 27]

Hardya signifer (THEN, 1897) – Localities: Podlasie (CHUDZICKA 2004) – South European; *Festuca ovina* (and others?); 1st degree monophagous?; adult; 1 [Fig. 27]

Cicadula saturata (EDWARDS, 1915) – Localities: Baltic Coast: Święta ad Goleniów, Słupsk (WAGNER 1941); Masurian Lake District: Bagna Kuwaskie ad Grajewo (ANDRZEJEWSKA 1965); Białowieża Forest: Białowieski National Park (KARPIŃSKI 1958); Krakowsko-Wieluńska Upland: Ojców ad Olkusz (SZWEDO 1992); Sandomierska Lowland: Janów Lubelski (BEDNARCZYK, GĘBICKI 1998) – Siberian; *Carex nigra*, *C. rostrata*?; 2nd degree monophagous ?; egg; 1 [Fig. 27]

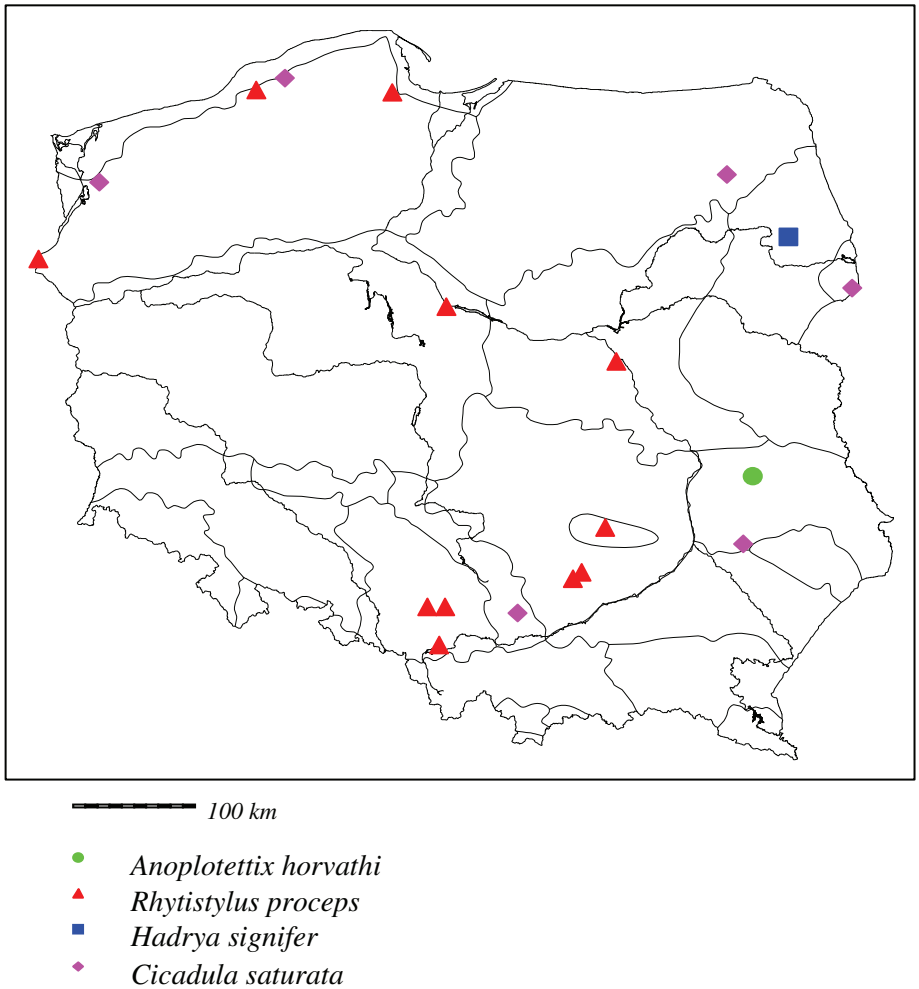


Figure 27.

Speudotettix montanus (GĘBICKI et SZWEDO, 1991) – Localities: Bieszczady Mts: Tarnica (GĘBICKI, SZWEDO 1991) – European high mountains?; deciduous woody plants?; polyphagous?; nymph?; 1? [Fig. 28]

Perotettix pictus (LETHIERRY, 1880) – Localities: Upper Silesia: Brynek ad Tarnowskie Góry (NAST 1955); <<Sudety>> (WAGNER, FRANZ 1961) – European; *Picea*, *Abies*?; 1st degree monophagous?; nymph; 1 [Fig. 28]

Colobotettix morbillosus (MELICHAR, 1896) – Localities: Pomeranian Lake District: Żukowo ad Kartuzy (MATSUMURA 1906); Upper Silesia: Brynek ad Tarnowskie Góry (NAST 1955); Western Beskidy Mts: Babia Góra (NAST 1955); <<Western and Eastern Prussia>> (WAGNER, FRANZ 1961) – European; *Picea*, *Abies*?; 1st degree monophagous?; nymph; 1 [Fig. 28]

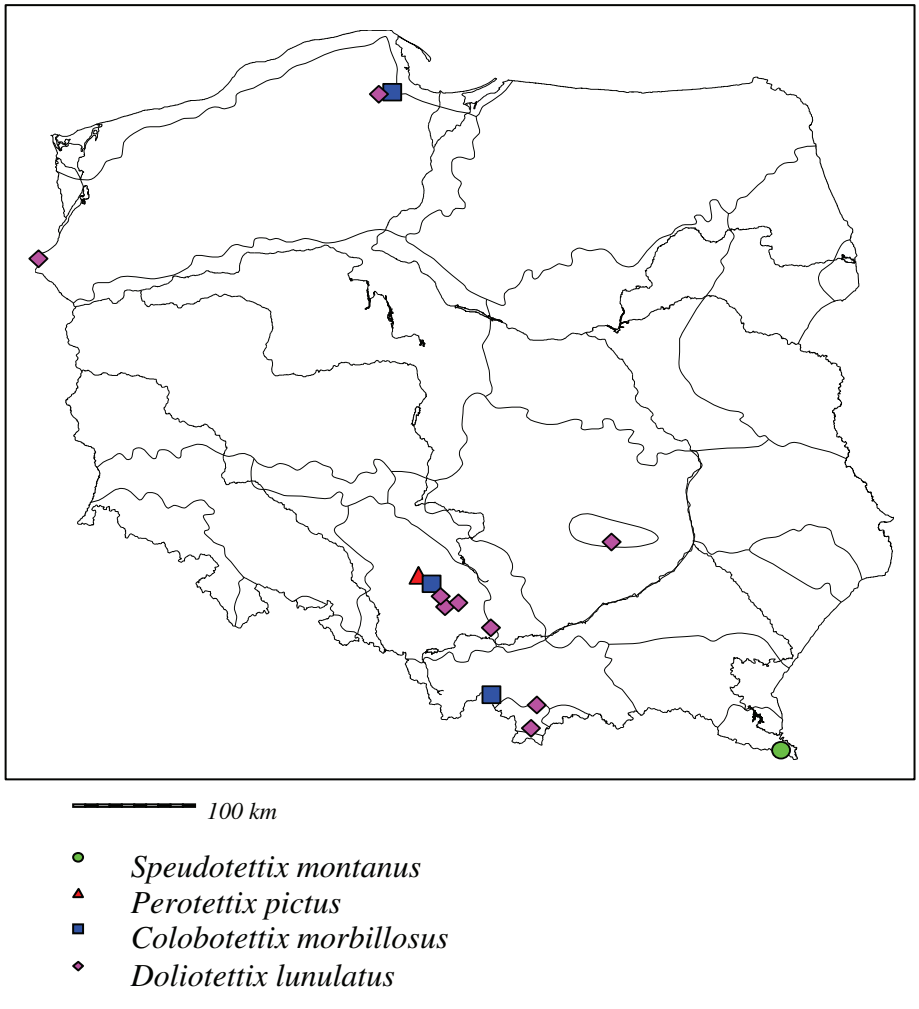


Figure 28.

Doliotettix lunulatus (ZETTERSTEDT, 1838) – Localities: Pomeranian Lake District: Żukowo ad Kartuzy (MATSUMURA 1906), Bielinek ad Chojna (HAUPT 1931, 1935); Upper Silesia: Katowice, Sosnowiec, Bytom (WAL-

CZAK 2005 and unpublished data); Krakowsko-Wieluńska Upland: Regulice ad Chrzanów (SMRECZYŃSKI 1954); Świętokrzyskie Mts: Cisów ad Kielce (NAST 1938a); Nowotarska Dale: Nowy Targ, Zakopane (SMRECZYŃSKI 1954); <<Prussia>> (SIEBOLD 1839, BRISCHKE 1871) – Siberian; *Agrostis stolonifera*?; 1st degree monophagous?; nymph; 1 [Fig. 28]

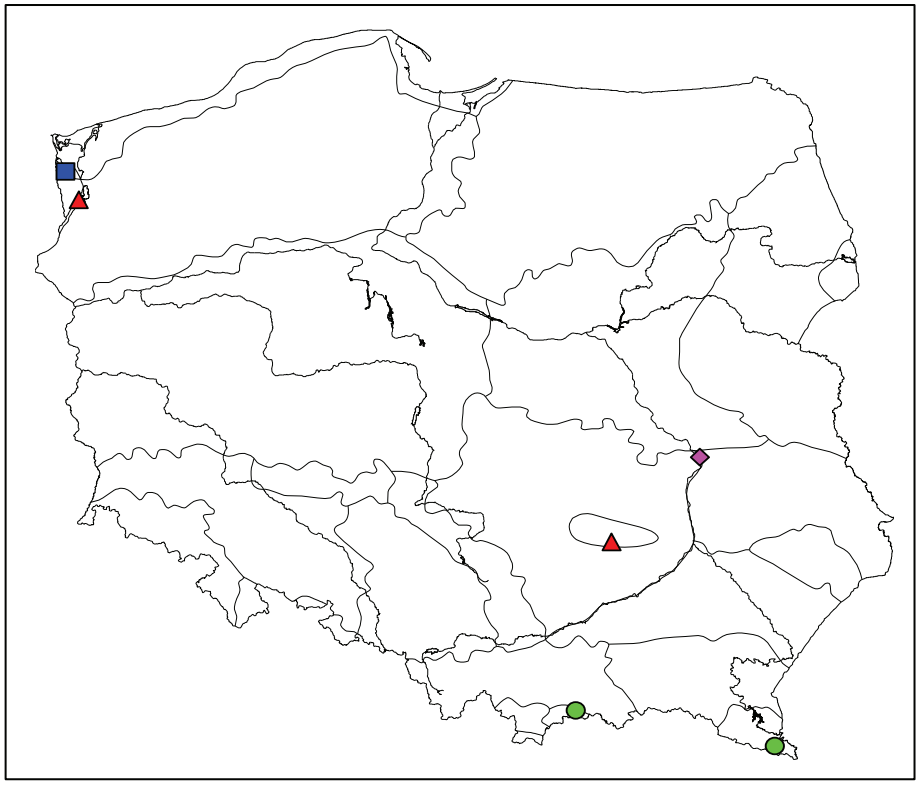


Figure 29.

Handianus flavovarius (HERRICH–SCHÄFFER, 1835) – Localities: Bieszczady Mts: Nat. Reserv. 'Tarnawa', Bieszczadzki National Park

(SZWEDO et al. 1998); Pieniny Mts: Zielone Skałki (NAST 1973) – Eurosiberian; ?; ?; ?; ? [Fig. 29]

Handianus ignoscus (MELICHAR, 1896) – Localities: Pomeranian Lake District: Szczecin (WAGNER 1941); Świętokrzyskie Mts: Cisów ad Kielce (NAST 1938a) – Kazakh; *Cytisus scoparius* (and others?); 2nd degree monophagous?; egg; 1 [Fig. 29]

Limotettix atricapillus (BOHEMAN, 1845) – Localities: Baltic Coast: Karpin ad Szczecin (WAGNER 1941, 1943) – North European; *Rhynchospora alba* ?; 1st degree monophagous?; egg; 1 [Fig. 29]

Laburrus pellax (HORVÁTH, 1903) – Localities: Lubelska Upland: Puławy (SCHIEMENZ 1969) – Kazakh; *Aster linosyris*; 1st degree monophagous; egg; 1 [Fig. 29]

Euscelidius variegatus (KIRSCHBAUM, 1858) – Localities: Wielkopolsko-Kujawska Lowland: Brodziszewo ad Szamotuły, Pęda ad Wągrowiec (SZULC-ZEWSKI 1933) – Western Palaearctic; *Atriplex*? and others; polyphagous?; egg; 1 [Fig. 30]

Euscelis ohausi WAGNER, 1939 – Localities: Baltic Coast: Chłapowo, Tupadły, Jastrzębia Góra, Ostrowo ad Puck (SMRECZYŃSKI 1954); Pomeranian Lake District: Kalisz Pomorski (GĘBICKI 1980, unpubl.); Upper Silesia: Pilica, Lubliniec (GĘBICKI 1977 unpubl., LIS 1988 unpubl.) – Western European; *Cytisus scoparius*, *Genista anglica*; 1st degree oligophagous; egg; 1 [Fig. 30]

Streptanus ogumae (MATSUMURA, 1911) – Localities: Sandomierska Lowland: Janów Lubelski (BEDNARCZYK, GĘBICKI 1998) – Siberian; *Calamagrostis canescens*; 1st degree monophagous; egg; 1 [Fig. 30]

Artianus interstitialis (GERMAR, 1821) – Localities: Pomeranian Lake District: Bielinek ad Chojna (NAST 1973); Wielkopolsko-Kujawska Lowland: Ciechocinek ad Aleksandrów Kujawski (NAST 1973); Mazovian Lowland: Wyszogród ad Płock, Rybienko ad Wyszków, Warszawa (NAST 1973); Lubelska Upland: Tyszowce ad Tomaszów Lubelski (NAST 1973) – Western Palaearctic; *Elymus repens* and other Poaceae; 1st degree oligophagous; egg; 1 [Fig. 30]

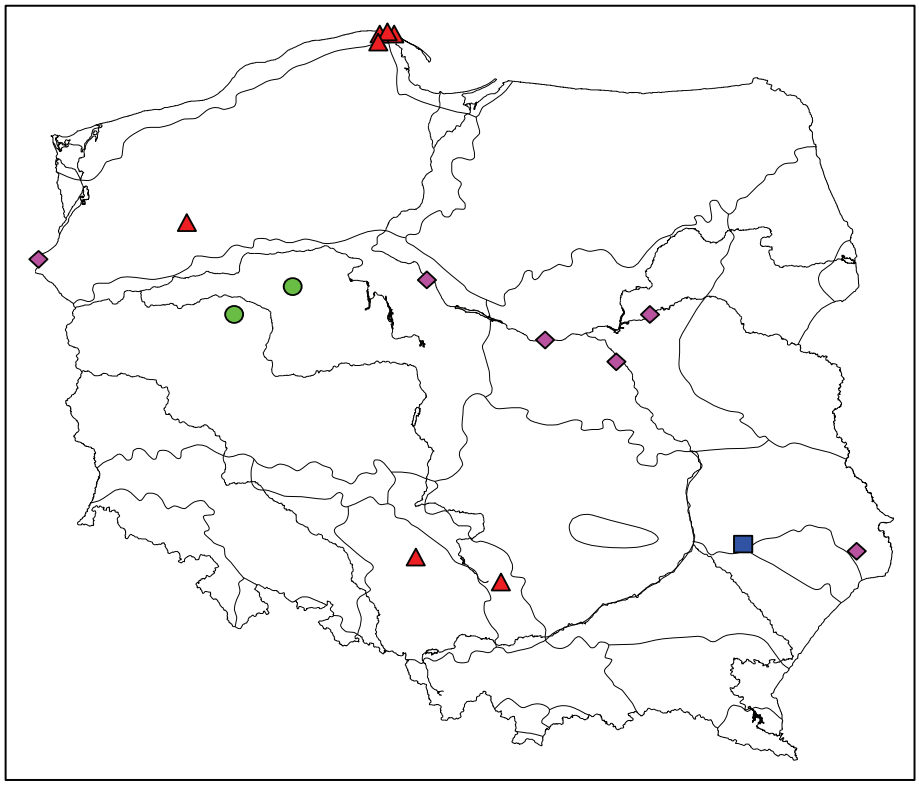


Figure 30.

Parapotes reticulatus (HORVÁTH, 1897) – Localities: Baltic Coast: Jastarnia ad Puck (NAST 1976b); Małopolska Upland: Owczary ad Busko-Zdrój (NAST 1955) – Eastern European?; *Schoenoplectus lacustris*; 1st degree monophagous?; egg; 1 [Fig. 31]

Paralimnus phragmitis (BOHEMAN, 1847) – Localities: Baltic Coast: Sopot, Elbląg (MATSUMURA 1906), Słupsk (KARL 1935, WAGNER 1941); Masurian Lake District: Gardeja ad Kwidzyń (MATSUMURA 1906); Upper Silesia: Dąbrowa Górnicza, Katowice (GĘBICKI 1979 and unpubl. data); Małopolska

Upland: Owczary ad Busko-Zdrój (NAST 1976b) – Western Palaearctic?; *Phragmites australis*; 1st degree monophagous; egg; 1(–2?) [Fig. 31]

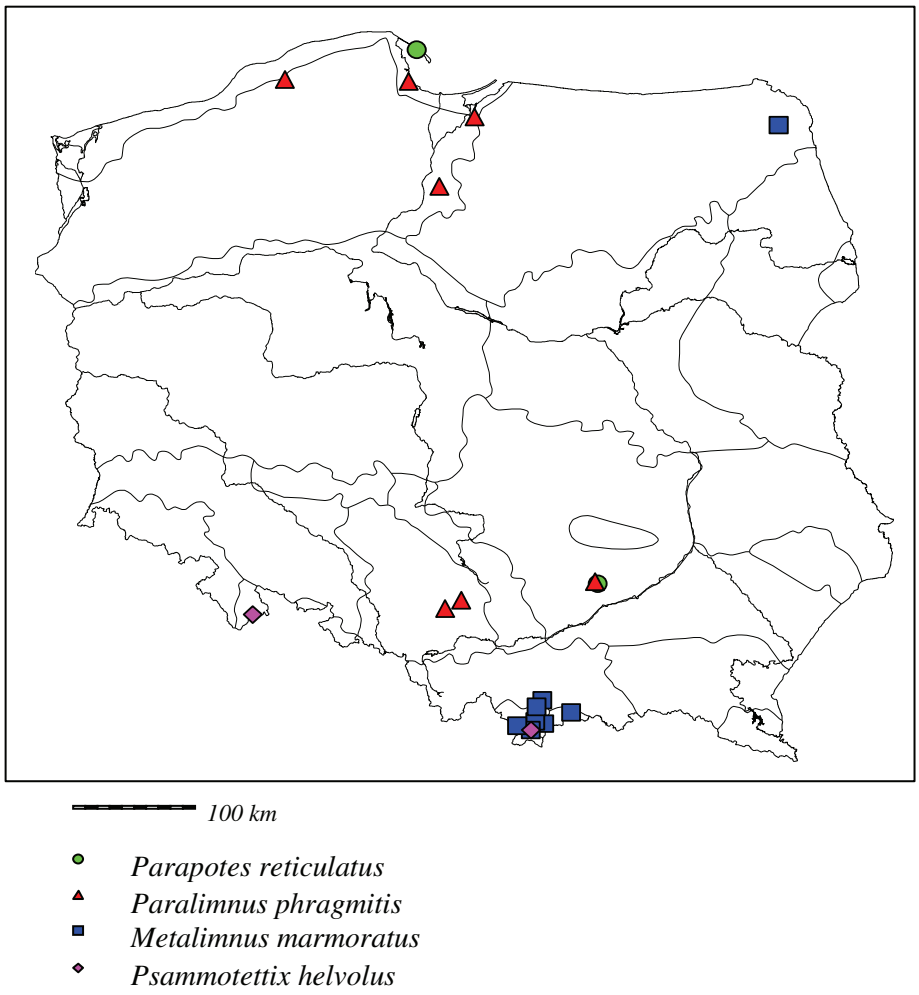


Figure 31.

Metalimnus marmoratus (FLOR, 1861) – Localities: Masurian Lake District: Wigry Lake shore ad Suwałki (NAST 1938b); Western Beskidy Mts: Gorce (SMRECZYŃSKI 1906b, 1910a); Nowotarska Dale: Bukowina ad Nowy Targ (SMRECZYŃSKI 1906b), Nowy Targ, Biały Dunajec ad Nowy Targ, Zakopane (SMRECZYŃSKI 1954); Pieniny Mts: Krościenko (SMRECZYŃSKI 1954);

Tatra Mts (SMRECZYŃSKI 1954) – Siberian; *Carex limosa*; 1st degree monophagous; egg; 1 [Fig. 31]

Psammotettix helvolus (KIRSCHBAUM, 1868) – Localities: Eastern Sudetes Mts: Śnieżnik Kłodzki (WAGNER 1958); Tatra Mts (SMRECZYŃSKI 1954); <<Sudety>> (WAGNER, FRANZ 1961) – Eurosiberian; Poaceae; 1st degree oligophagous; egg; 1-2 [Fig. 31]

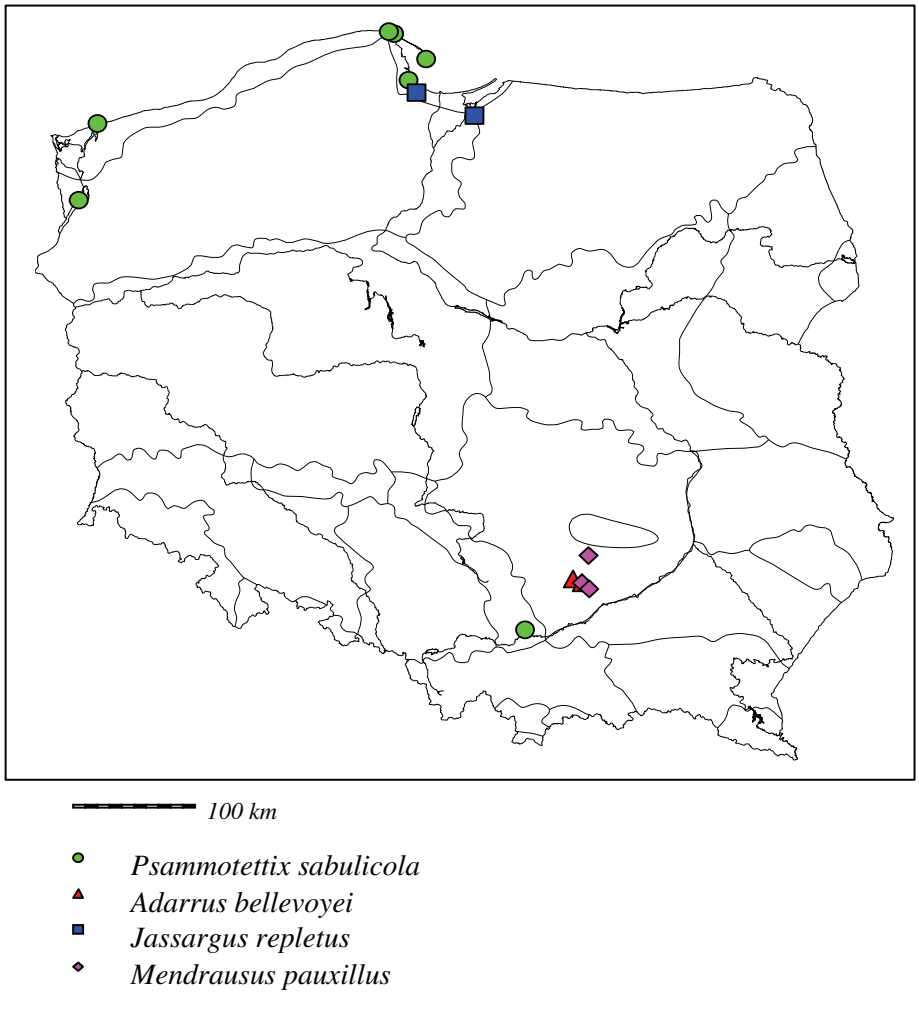


Figure 32.

Psammotettix sabulicola (CURTIS, 1837) – Localities: Baltic Coast: Dziwnów ad Wolin (WAGNER 1941), Sopot, Hel (MATSUMURA 1906), Chłapowo and Tupadły ad Puck (SMRECZYŃSKI 1954); Pomeranian Lake District: Szczecin (WAGNER 1941); Krakowsko-Wieluńska Upland: Kraków and vicinities (STOBIECKI 1915) – Western European?; *Elymus*, *Ammophila?*, *Calamagrostis* ?; 1st degree oligophagous?; egg; 2 [Fig. 32]

Adarrus bellevoyei (PUTON, 1877) – Localities: Małopolska Upland: Michałów and Nat. Reserv. 'Krzyżanowice' ad Pińczów (KOSTROWICKI 1953, 1954, 1966, NAST 1955, GĘBICKI 1987) – Kazakh; *Brachypodium pinnatum*; 1st degree monophagous; egg; 1? [Fig. 32]

Jassargus repletus (FIEBER, 1869) – Localities: Baltic Coast: Gdańsk, Elbląg (MATSUMURA 1906); <<Silesia>> (MELICHAR 1896) – Eurosiberian; Poaceae indet.; 1st degree monophagous?; egg; 1 ? [Fig. 32]

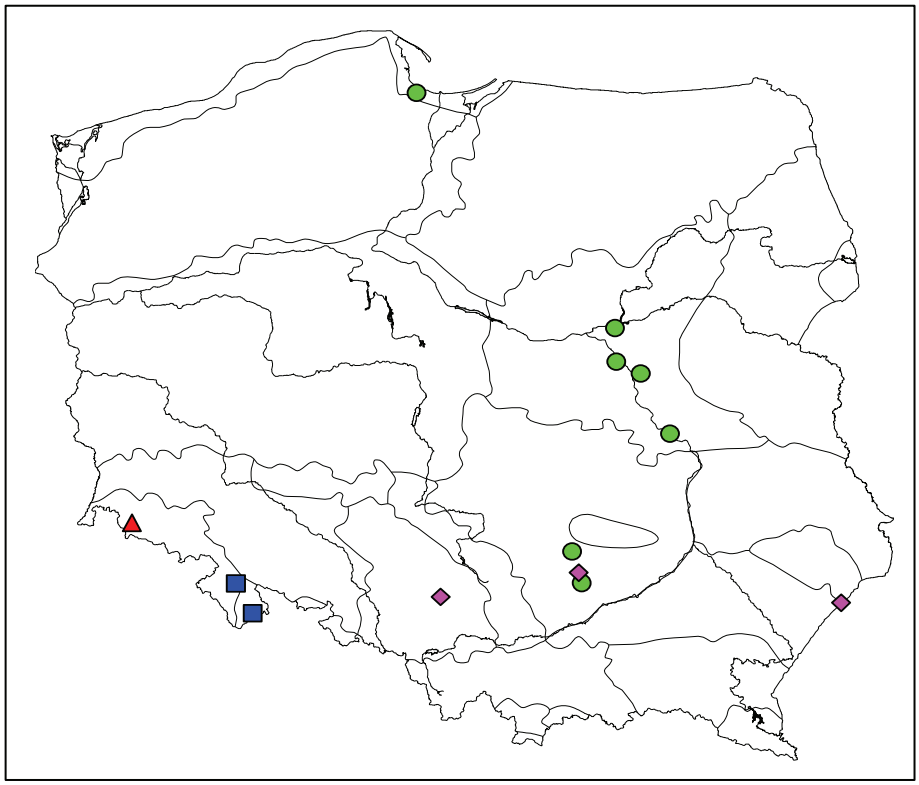
Mendrausus pauxillus (FIEBER, 1869) – Localities: Małopolska Upland: Krzyżanowice and Grabowiec ad Pińczów (NAST 1955, GĘBICKI 1987), Skorocice ad Busko-Zdrój (SCHIEMENZ 1969) – Kazakh; *Festuca ovina*; 1st degree monophagous; egg; 1 [Fig. 32]

Pinumius areatus (STÅL, 1858) – Localities: Baltic Coast: Gdańsk (NAST 1976b); Mazovian Lowland: Zegrze ad Nowy Dwór Mazowiecki (NAST 1938b), Warszawa-Młociny, Śródborów ad Otwock, Holendry ad Kozienice (NAST 1976b); Małopolska Upland: Krzyżanowice ad Pińczów (NAST 1955), Sobków ad Jędrzejów (NAST 1976b) – Holarctic; *Koeleria* spec.?, *Festuca ovina*?; 1st degree monophagous?; egg; 1 [Fig. 33]

Verdanus bensoni (CHINA, 1933) – Localities: Western Sudetes Mts: Góry Izerskie (NAST 1973) – European high mountains; Poaceae indet.; 1st degree oligophagous; egg; 1 [Fig. 33]

Diplocolenus penthopitta (WALKER, 1851) [syn. *Diplocolenus sudeticus* (KOLENATI, 1860)] – Localities: Western Sudetes Mts: Szerlich Mt. near Zieleniec ad Kłodzko (NAST 1973); Eastern Sudetes Mts: Śnieżnik Kłodzki (WAGNER 1948) – European high mountains; Poaceae indet.; ?; egg?; 1 [Fig. 33]

Arthaldeus arenarius REMANE, 1960 – Localities: Upper Silesia: Bytom (RUDA 1981 unpubl.); Małopolska Upland: Pińczów (GĘBICKI 1987); Sandomierska Lowland: Dziewięcierz ad Lubaczów (NAST 1976b) – Siberian?; *Calamagrostis epigejos*; 1st degree monophagous; egg; 1 [Fig. 33]



100 km

- *Pinumius areatus*
- *Verdanus bensoni*
- *Diplocolenus penthopitta*
- *Arthaldeus arenarius*

Figure 33.

Cosmotettix aurantiacus (FOREL, 1859) – Localities: Baltic Coast: Ostrowo ad Puck (SMRECZYŃSKI 1954); Pomeranian Lake District: Kalisz Pomorski (GĘBICKI 1980, unpubl.); Masurian Lake District: Gamerki ad Olsztyn (NAST 1955); Białowieża Forest: Białowieża (NAST 1976b); Upper Silesia: Błędów ad Dąbrowa Górnicza (JASIŃSKA 1980); Western Beskidy Mts: Gorce (SMRECZYŃSKI 1906b, 1910a); Nowotarska Dale: Nowy Targ, Biały Dunajec and Poronin ad Nowy Targ, Zakopane (SMRECZYŃSKI 1954); Bieszczady Mts: Nat. Reserv. 'Tarnawa' – Bieszczadzki National Park (SZWEDO et al. 1998) – Siberian; *Carex*?; 1st degree monophagous; egg; 1 [Fig. 34]

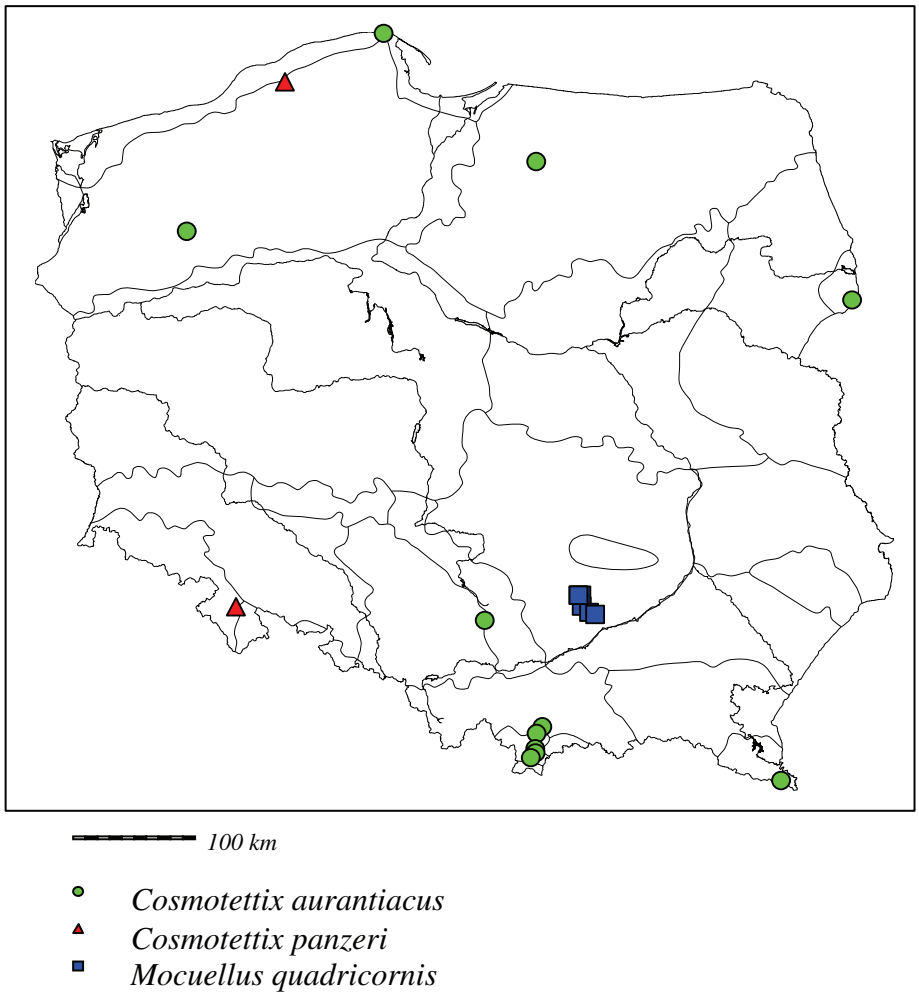


Figure 34.

Cosmotettix panzeri (FLOR, 1861) – Localities: Baltic Coast: Słupsk (KARL 1935, WAGNER 1941); Western Sudetes Mts: Nat. Reserv. 'Zieleniec' ad Kłodzko (SZWEDO et al. 1998) – North European; *Eriophorum angustifolium*; 1st degree monophagous?; egg; 1 [Fig. 34]

Mocuellus quadricornis DLABOLA, 1949 – Localities: Małopolska Upland: Krzyżanowice ad Pińczów (KOSTROWICKI 1953, NAST 1955), Skotniki Górne and Skorocice ad Pińczów, Chotel Czerwony ad Busko-Zdrój (NAST

1955); Pińczów, Włochy ad Pińczów (GĘBICKI 1987, JAWORSKA 1988 unpubl.); Kazakh; Poaceae; 1st degree oligophagous; egg; 2 [Fig. 34]

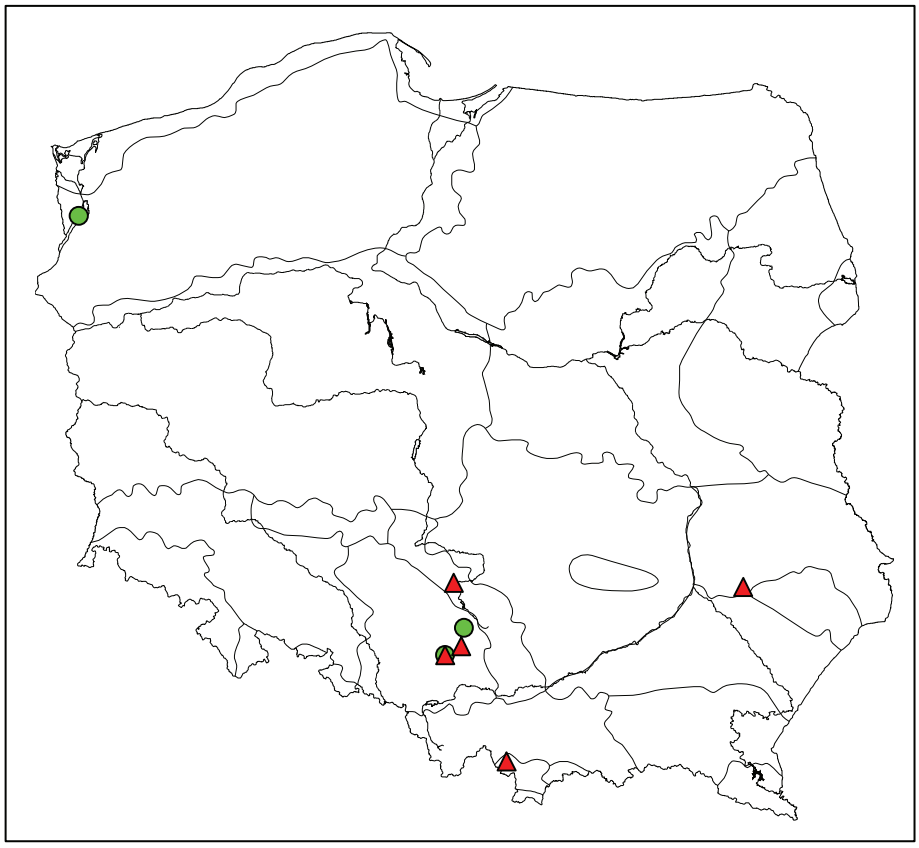


Figure 35.

Cicadula flori (J. SAHLBERG, 1871) – Localities: Pomeranian Lake District: Szczecin (SCHMIDT 1912, WAGNER 1941); Upper Silesia: Siewierz, Katowice (DOBRZAŃSKA 1978 unpubl., GĘBICKI unpubl.) – Eurosiberian; *Carex acuta*, *C. acutiformis*?; 2nd degree monophagous?; egg; 2 [Figure 35]

Mocydiopsis parvicauda RIBAUT, 1939 – Localities: Krakowsko-Wieluńska Upland: Częstochowa (ŚWIERCZEWSKI, GĘBICKI 2004); Upper Silesia: Dąbrowa Górnicza, Katowice (GĘBICKI 1979 and unpubl. data); Sandomierska Lowland: Janów Lubelski (BEDNARCZYK, GĘBICKI 1998); Nowotarska Dale: Jabłonka ad Nowy Targ (NAST 1973) – European; *Agrostis capillaris*; 1st degree monophagous; adult; 1 [Figure 35]

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Dariusz Świerczewski[a], Paweł Gruca[b]

Rzadkie gatunki piewików w faunie Polski – mapy rozmieszczenia (Hemiptera: Fulgoromorpha et Cicadomorpha)

Abstrakt

Artykuł prezentuje dokładne dane o stanowiskach 137 rzadkich gatunków piewików w faunie Polski uzupełnione o mapy ich rozmieszczenia na terenie kraju. Dla każdego gatunku podano także charakterystykę chorologiczną i ekologiczną.

Słowa kluczowe: Insecta, Hemiptera, Fulgoromorpha, Cicadomorpha, piewiki, Polska, rzadkie gatunki, mapy rozmieszczenia